Gleanings in Bee Culture

April, 1958 Vol. 86, No. 4

CONTENTS

86 years continuous publication by the same organization.

Monthly Honey Report	Walter Barth	197
Producing and Shipping Bees and Queens	E. C. Bessonet	201 - 203
Spring Feeding	Milton H. Stricker	204 - 206
The Food of the Drone Layer	Mykola H. Haydak	207 - 209
Honey for Breakfast Week		209
Don't Take Soil for Granted	Don Cooke	210 - 211
Better Queens — The Mating Nuclei	John W. Holzberlein	212 - 216
Hive Body Manipulation	E. G. Kyte	217
A Place for Young People in Beekeeping	Robert M. Mead	218 - 219
From Foreign Lands	Erika Barth	220
Research Review	Roger A. Morse	221
For the Easter Dinner	Mrs. Benj. Nielsen	222
Live and Learn	Propolis Pete	223
Editorials		224 - 225
News Reel		226 - 227
Let's Talk about Honey Plants	Harvey B. Lovell	228 - 229
We Visit the National Honey Show	Henry J. Rahmlow	230 - 231
Price Support for Honey for 1958 Season		231
Asked and Answered		232
What's in Royal Jelly?	A. B. Kennerly	233
Income Tax Return on Bees	Alymer J. Jones	234
A Preventive Measure	W. K. McKinley	234
Killions Win National Acclaim		235
I Convert a Doubtful Friend	Mrs. E. D. Fox	236
It's an Idea	M. H. Stricker	236
How Much Do We Know about Bees?	D. A. Purves	237
A Talk to Beekeepers	M. J. Deyell	238 - 241
Just News		242 - 243
Honey Cookery Contest in Rhode Island a Big Success	W. K. Davis	243
Our Cover		249

Subscription Rates: United States, Canada, Pan American countries, and Spain, one year, $2.00; two years for $3.50; three years for $5.00. Single copy, 20c. Other countries, 50c per year additional for postage. Discontinuance: Subscription stopped on expiration. No subscriber will be run into debt by us for this journal. Change of Address: Give your old address as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be sent by post office money order, bank draft, express money order, or check. Contributions to Gleanings columns solicited; stamps should be enclosed to insure return of manuscript to author if not printed. Advertising Rates: Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. Advertisers' Reliability: While the publishers do not guarantee advertisements in this journal, they use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.

Entered as second class matter at Post Office at Medina, Ohio. Published monthly. Opinions expressed by the writers in these columns are not necessarily the opinion of the editors.

The A. I. Root Company, Publishers, Medina, Ohio
M. J. Deyell, Editor — John Root, Managing Editor
Huber H. Root, Associate Editor — Walter Barth, Field Editor
Mildred W. Hobart, Assistant Editor — Roger A. Morse, Research Editor

BEES INSURE BETTER INCOME

When you produce COMB HONEY in SECTIONS.
The most profitable way for beekeepers.
Write for our free catalog and be convinced.

MARSHFIELD MFG. COMPANY

MARSHFIELD **WISCONSIN**
Wholesale — **Retail**

F. W. JONES & SON, LTD., BEDFORD, QUE., CANADA
Manufacturers and Exporters of Bee Supplies
— Price List on Request —
U. S. Shipments from Swanton, Vermont

H. H. JEPSON CO. — 289 Congress St., Boston, Mass.
Supplying N. E. Beekeepers with A. I. Root products
for 50 years.
Boston Stock — Root Prices

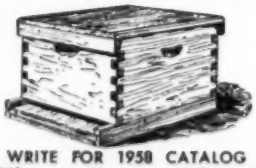
DO YOU KNOW?

We Render Cappings, Old Combs, and Slum-gum.

Rates are reasonable with a good job assured. Extra wax secured over ordinary beekeeper methods will often cover charges. See page 11 of our 1957 catalog for complete information. We are always in the market for beeswax, cash, trade, or to be worked into Bee Comb Foundation.

A. G. Woodman Co. **Grand Rapids 4, Michigan**

BEE SUPPLIES



WRITE FOR 1958 CATALOG
Williams Bros. Mfg. Co.
5205 SE 82 AVENUE
PORTLAND 66, ORE.

K. P. BENSON
Manufacturers
Comb
Foundation
Wired and Plain
Billings Bridge, RR 1
Ottawa, Ontario, Canada
Price List on Request
Dealers Wanted

XUM

August Lotz Co.

MANUFACTURERS
of the
FINEST HONEY SECTIONS

We
also carry
a
complete line
of
Beekeepers Supplies

Write for our 1958 pricelist

* * * * *

Boyd, Wisconsin

A
COMPLETE SERVICE
for
New York State
and Eastern Beekeepers
from
M. R. CARY CORPORATION
(Formerly A. I. Root Co., of Syracuse)
Syracuse, N. Y.

* **Root QUALITY Bee Supplies to help you get more honey**
* **A complete line of Glass and Tin Containers**
* **A ready market for your Honey and Beeswax at top prices**
* **Rendering service for your old combs and cappings**

A postal card request will bring you Root's complete catalog and our container price list. Orders shipped promptly. Reasonable prices. Send sample of honey, advising how much you have. Shipping tags for honey, wax, combs and cappings sent on request.

M. R. CARY CORPORATION

219 Washington Square
at 1612 N. Salina Street
Syracuse 8, New York

"CONNEAUT"

A Dependable Name for
60 lb. Cans

Handled by Best Jobbers
Made by
THE CONNEAUT CAN CO
Conneaut, Ohio
Phone 32981

For the very finest
Thin Super
and
Medium Brood Comb Foundation
made of
Pure Beeswax
contact

The Schmidt Apiaries
Rt. 4, Bay City, Mich.
P.S. From Dec. 1st to Mar 15th we render your cappings, combs, and refuse.

For
Root QUALITY
Goods in MICHIGAN
It's
Prairie View Honey Co.
2 Blocks from the Expressway
Now Open to All Points
North and West
"Everything for the Beekeeper"
and plenty of FREE parking
for CASH-and-CARRY
CUSTOMERS
HONEY and BEESWAX
bought or traded
for supplies
Mail Orders Handled Promptly

PRAIRIE VIEW HONEY CO.
12303 12th St., Detroit 6, Mich.

XUM

A PRODUCT
OF CAREFULLY
CONTROLLED
CROSS BREEDING

DEVELOPED FROM
LIGHT 3 BANDED
ITALIANS

Sorry, we are sold out of all packages until after April 15th. Can accept a few more orders for shipment last half of April and first part of May. Please see our March ad for prices, etc.

QUEENS

Our queen yards will be in full operation until October 15th. Thousands of world famous CLOVERLINE queens will be available for your requeening and other needs. BOOK YOUR ORDER EARLY FOR PREFERRED DATES.

We ship only young queens, guaranteed mated and laying. Clipped and marked at no extra charge and shipped air mail postpaid.

PRICES

April 15th to May 15th	$1.25 each
May 16th to October 15th	
1-24	$1.00 each
25-49	.90 each
50 and over	.85 each

CLOVERLINE APIARIES

P. O. Box 5126 Columbia, S. C.

Monthly HONEY Report

WALTER BARTH, Field Editor

THE REVISED report of 1957 honey production boosts the United States' total to 242 million pounds. The reported December 15th stocks of honey on hand came to 64.5 million pounds and the total average colony production for the past season was 44.8 pounds. How does this average compare with your bees?

On the marketing side of the picture the retail demand continues good generally but the wholesale market is sluggish. Some price cutting is again reported. Honey exports (April through November) come to 13,589,616 pounds as compared with 11,735,159 pounds for the same eight months last season. And as in the past, West Germany remains our leading buyer. Even with the greater export of honey, prices to beekeepers continue to be one to two cents per pound below 12 months ago. Now producers are hoping for a better season in view of the bright prospects for the 1958 crop.

Beeswax price has settled further to around 49 or 50 cents per pound FOB producers on a cash basis with generally some allowance extra for trade. In some areas the price is more or less than this figure. The larger 1957 honey crop, the cut back industrial production over the country and a reduction in the price of foreign waxes is no doubt responsible. It is easy to see that with a good honey crop in parts of the Great Lakes area, New York State, and Texas, a lot more wax flows to market. Take Texas, for example. In 1956, Texas produced 6,233,000 pounds of honey while in 1957 honey production jumped to 11,970,000 pounds, or almost double. In short, as honey production nears the normal in good producing area, the price of wax adjusts itself accordingly.

Shown below, in a chart, is the national average retail honey price picture based on sales of both large and small honey packers. In some areas prices are higher, and unfortunately, even lower in others.

National Average Retail Honey Prices

Liquid Honey: Good quality	
½ lb. jar	$ .22 each
1 lb. jar	.37 each
2 lb. jar	.69 each
5 lb. jar	1.43 each
Creamed Dyce Process Honey	
12 oz. in glass	$ .33 each
10 oz. in paper cartons	.29 each
Chunk or Cut Comb Honey	
1 lb. 4 oz. jar	$ .53 each
Specialty	
1 lb. glass honey server	$ .53 each
12 oz. plastic honey server	.39 each

Wood Preservative

FOR SOME years the Carbolineum Wood Preserving Company has been in the business of wood rot and termite protection to home owners and farmers. Of late they have been interested in finding a new market for their wood preservative — Avenarius, among beebeepers. Avenarius Carbolineum is a thin heavy oil which gives the wood a rustic nut-brown color.

XUM

A Giant Super Market of Bee Supplies

Barrel gaskets are a stock item with us.

We are no hole in the wall operators. At this season we have in stock far more than $100,000.00 worth of bee equipment in stock. Thousands of hives and supers, tons of comb foundation, much more than 100,000 frames and many items not found in the competitors' catalogs. We attempt to ship every order the day received and come close to doing it. Our quality is the best and our prices are the lowest because we sell direct to you. Write now for our free catalog and see how we save you 25% and more.

THE WALTER T. KELLEY CO., Clarkson, Ky.

SUE BEE SAYS:

"For greater profits, use first quality. SUE BEE Foundation does not cost. . . .it pays. You will be pleased with the supreme quality that makes SUE BEE the finest. Write for our prices and working charge rates.

"Check these prices. . . .place your order with the Sioux Honey Association plant nearest you."

No. 1 Brood Frames (100)	$12.25	No. 1 Hive Bodies (100)	$150.00
9.5 gram Fumidil	28.50	Cypress Bottom Boards	1.45
5 lb. Sodium Sulfa	19.50	5 lb. Frame Wire	3.75
5 lb. Powdered Sulfa	19.50	Leather Bee Gloves	1.90
100 lb. Soy Flour	12.50	Wire Folding Veils	1.50
50 lb. Brewers Yeast	7.50	4 x 7 Smokers	2.35
Masonite Div. Bd. Feeders	1.25	Heavy Duty 2 wheel Hand Trucks	335.00
1957 Stain'ess Steel Tank SUE BEE UNCAPPER	1495.00		39.95

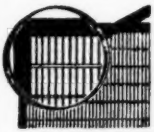
SIOUX HONEY ASSOCIATION Sioux City, Iowa

Lima, Ohio; Rogers, Texas; Tacoma, Wash.; Anaheim, Calif.; Waycross, Ga.

HONEY WANTED
Cut Comb and Extracted
Advise what you have
T. W. BURLESON & SON
WAXAHACHIE, TEXAS

For
Royal Jelly
Quality & Quantity
Contact
Overbey Apiaries
Bunkie, Louisiana

Chrysler's Electric Welded All-Steel Queen Excluder



The only worthwhile Queen Excluder on the market

- Accurate spacing
- Allows maximum bee passage
- Better ventilation
- More honey production
- No wood. No burr combs
- No sharp edges to injure bees
- So durably made that it is permanently queen excluding and will last a life time.

We manufacture a full line of Bee Supplies. Order from our dealers or direct from our factory. Canadian-made goods are cheaper. No duty. Send for our price list. Always in the market for beeswax. Cash or trade.

W. A. Chrysler & Son
Chatham - Ontario - Canada

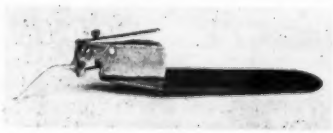
Stoller's

Frame Spacers
The finest thing ever offered beekeepers. See your dealer, or write.

STOLLER HONEY FARMS
Latty, Ohio

Protect Your Future. Buy Your Savings Bonds Now.

PROTECT BOTTOM BOARDS from rot and termites
Carbolineum adds years to the life of wood — prevents decay and termite attack.
Used by leading commercial and non-commercial beekeepers. Especially recommended for hives taken to the field and set on ground.
For full information write
CARBOLINEUM WOOD PRESERVING CO.
Dept. G, Milwaukee, Wis.



Use the MASTER Queen Grafting Tool for fast, easy and accurate transferring.
$3.60 each
including extra rustless tongue.
YOUR DEALER STOCKS THEM.
HUTCHISON MFG. CO. 2904 Colorado Ave. Santa Monica, Calif.

One 4-oz. Jar of Honey containing 2000 mg. of Royal Jelly ready to take .....$4.00. 12 or more jars, 20% discount.
We deliver it in the U.S.A.
JACKSON APIARIES P.O. Box 58 Funston, Ga.

XUM

"Say, honey, what makes you sell so sweet?"

"H-A ...glamour in glass!"

Even the bees are buzzin' about how to make hay with honey in H-A Pail, Comb, and Queenline Jars. Sparkling crystal-clear *Queenliners* fill quickly, pour easily, and sweet-talk to your customers wherever they're displayed. H-A also offers a complete line of beautiful flint containers for your pail and comb sales. For details, get in touch with your nearby H-A office.

HAZEL-ATLAS GLASS

division of CONTINENTAL © CAN COMPANY

WHEELING, WEST VIRGINIA

Queen producing yard of the Bessonet Bee Co.

Producing and Shipping BEES and QUEENS

as practiced by E. C. BESSONET, Donaldsonville, La.

IT WAS in the spring of 1917 that the writer spent some time in the swamps of Bayou De Glaise in central Louisiana to work with a pioneer shipper of queens and bees. The methods used in those days did not change much insofar as basic ideas are concerned, as compared with methods of today. The shipping cages had cluster supports and instead of cans with sugar syrup, candy was used. The queen cages were the Benton type still used today.

Mass production of queen bees had not as yet been developed to the extent known today and as a result, the equipment used did not lend itself to mass production. Divided hives were used which required several standard frames and a large number of bees to stock the queen nuclei. With the need of an inner cover, work was slowed down and in addition no practical method had been developed to keep nuclei records and that to my mind was a serious handicap.

Progressive package and bee shippers of today have stream-lined both their equipment and methods to permit speedy operations with a minimum amount of labor. This involves what is called "BABY" nucs having two or more small frames with a division feeder for syrup. Methods of keeping records to facilitate operations have been introduced. Since queens can lay only a short time in the nucs to enable the operator to produce a large number

of queens per nuc during the season, the "BABY" nuc is ideal. The primary reason is that if a queen is permitted to lay a very short time, the working force is relatively small and this force is better off and easier to manage than the same force in a larger nuc. If large nucs are used and the queens are removed within a day or two, then the force is too small for the nuc which invites robbing and wax moths. Large nucs are recommended for beekeepers who keep queens for replacements and are not interested in mass production.

Behavior of Bees in Nucs

The experienced producer has found from experience that the larger number of bees in a nuc, the more trouble he has with behavior of bees. More virgins are balled and more cells cut down during periods of adverse weather conditions. Queens are also more difficult to find in populated nucs. It is also well known that a small force is more difficult to manage due to the need for special methods to assure a minimum of absconding at mating time and swarming out at other times. Baby nucs also require more feeding, as they are unable to support themselves as well as nucs with a larger population. In the final analysis, we find that both the large nucs and the baby nucs have a very definite place in our beekeeping operations, but it is impossible to substitute when one particular type is required for a particular job.

Methods of keeping nuc records are used and usually some type of indicator is used and in many instances several indicators are used on the nucs to keep the records. The producer must know the date the queen cell was grafted, the time the queen has started to lay, and in the event that the queen has not started to lay, this has to be indicated. When the queen is removed and when a cell has been placed in the nuc must be indicated. Some nucs need additional bees, or some other form of help, so this condition must be indicated. Each nuc required special attention and when thousands are being operated, records if not adequate can slow down the work.

Production Depends on Cells

A queen yard is like a piece of farm land and will produce according to conditions and the ability of the producer to have available a large number of queen cells for prompt placements in the nucs when needed. If a shortage of queen cells develops, then production drops according to the shortage and this can become a serious problem during periods of heavy shipping. Experience in producing queen cells is a prime factor in queen production and only many years of facing problems and solving them will assure some measure of success in queen rearing.

We must keep in mind the fact that cell production is carried on during all types of conditions and the producer who understands bee behavior and is able to improvise to help imitate nature will maintain a fairly good average. No matter how well the job is done there will be a drop in production, but if the drop can be kept low, the damage is minimized and the shipping schedule is not badly interrupted.

Caging Queen Bees

We assume that the producer had the foresight to graft more queen cells than he plans on using to be able to cull the inferior cells. The placing of prime cells in nucs will eliminate much of the culling, as usually when cull cells are used due to a shortage more inferior queens are produced and have to be eliminated, and if caged, the buyer has a just cause to complain.

The handling of queens should be done only by experienced people as only experienced workers understand and can identify queens which should be caged and those which should be killed.

The queen cage candy is made of invert sugar syrup and powdered sugar. Care should be used in preparing the candy, as it must not be too hard or too soft.

Queens should not be caged earlier than the day they are to be mailed, or not more than an extra day, as a caged queen is exposed to abnormal conditions which can impair her future performance.

If we consider the cost of the equipment, the need for a highly skilled crew and all the extra work required to produce good queens, we soon realize that producing queens is costly.

In addition to the care required in managing the nucs and the highly specialized work of producing good

Preparing packages of bees for shipment.

queen cells along with the large amount of money spent on sugar, good queens are expensive to produce. Expenses can be cut considerably if quality queens are not the objective of the producer.

Shipping Package Bees

I have placed much emphasis on the need to produce quality queens, as the queen is the heart of the hive and without her, or without a good productive queen, the whole package is of no value. However, there must be a combination of a good package with a good queen to assure maximum results in production. Perhaps few have given much thought to the matter of quality in a package, or what this means to the buyer. It is possible to get a good package of bees with a poor queen and likewise a good queen in a poor package, thus the need to clarify this matter to help the buyer with his plans.

Outyard Management a Factor in the Production of Good Packages

Under the conditions faced by most shippers, it is possible to produce packages with a balanced population as far as the ages of the bees are concerned and that is important to the buyer. In our own yards, we have a planned schedule of shaking bees for our queen yards that remove practically all old bees before the shipping of packages gets under way. In fact, we time our shipping of packages to follow immediately after we finish stocking our queen yards and in this way old bees are eliminated and few find their way into the packages. If a sufficient amount of brood is present, there will naturally be what is called a balanced population as to age and a package containing such bees is in better condition to go forward rapidly and produce strong colonies. This package contains bees that are not too old and it being known that bees have definite duties according to their age, we have a perfect condition for a package to develop normally.

You may rightfully ask how inferior

(Continued on page 255)

Time for spring inspection.

How are they surviving the winter?

Spring Feeding

MILTON H. STRICKER, Stockton, N. Y.

"THE UNIVERSAL Receipt Book", published in 1820, contains these directions for feeding bees: "Such stocks as are intended to be kept through the winter should weigh 20 pounds or upwards at the end of September; but casts and late swarms seldom attain this weight, unless two or more should have been united. The composition for feeding consists of moist sugar and new beer, the proportion of one pound of sugar to a pint of beer, simmered to the consistency of treacle; to be inserted into the hives, by means of small troughs, at night, and removed the next morning early. Should a hive be very poor and weak, it is better to feed in larger quantities each time".

A lot of bees in New Jersey are going to have to be fed this spring and it is going to have to be done a lot more simply than the description in the previous paragraph. The lack of fall flow, the small clusters, and the total absence of stored pollen makes wintering bees about as great a gamble as New Jersey apiculturists have seen for many a year.

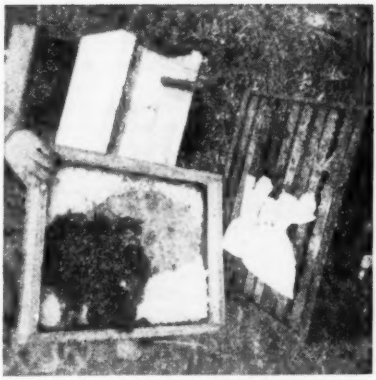
Those beekeepers who did feed sugar in the fall have helped their chance and if they feed pollen supplement this spring their build-up could be great enough to catch the Jersey honey flow which seems more elusive each year.

For those colonies that are strong enough, and well provisioned enough to start brood rearing, it will be an easy matter to place a friction-top can or jar over the open escape hole of an inner cover to get it going enough to build up for a bumper crop. But for those clusters that are small and especially if the spring weather is as cold and rainy as in the past three years, these "weak sisters" are doomed to extinction. Of course, the commercial apiarist doesn't have time to fool with this type of colony, but for one who has the time, a little work done on these colonies can develop normal producers.

The first question one should ask before attempting this chore: "Is this the colony worth saving?". This can be answered simply: "Is it headed by a queen that is capable of a normal build-

up if it does get an ample backing of food, pollen or pollen substitute, and enough young bees to give the colony the 'morale' that is so important to any colony that is expected to harvest a crop of honey?" And if it doesn't have this kind of "headmistress", can a good queen be obtained early to supply this necessary build-up?

There are a few lesser questions that might be asked such as the amount of time involved but a good many hobbyists will dispose of this one easily when the weather carries a hint of spring,



Screen containing Fuller candy

bees begin flying and pollen begins coming into the hives, and beekeepers begin to react to the compact brood pattern being laid by a young and capable queen.

Some beekeepers in New Jersey use a modified Alexander system of putting these small colonies over a populous colony, separating the two with a moving screen, or in some severe cases, a double excluder, then when the heat of the lower colony and some stimulative feed for the top part has caused it to begin to grow, the lower colony

Applying pollen substitute to colony that has Fuller candy on it.

is moved away. The smaller colony is then placed upon the stand formerly belonging to its benefactor and allowed to gather the field force of the former. The larger colony is then fed to increase its productivity and allowed to build up for the approaching honey flow.

Although this system is satisfactory, some beekeepers in the northern section of the State have modified this to save labor. When the small colony is located in the first inspection, it is relocated on the stand of one of the bigger colonies in the yard, the larger being placed in the position formerly occupied by the small one. Feeder cans are applied to both and this year pollen supplement will probably be added

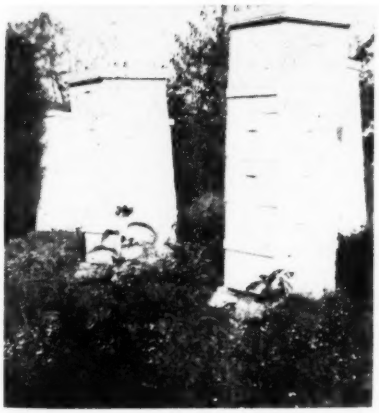
Fuller candy folded back to apply pollen substitute.

XUM

since bees are lacking in stored pollen.

As for the pollen substitute, the argument still waxes pro and con between the New Jersey beekeepers and the pros are changing to cons about as rapidly as the cons change to pros.

Those who used soy bean meal and brewers yeast in the spring of 1957 for the first time are loud in condemning it. In some cases those who had had previous experience with it argued that it seemed worthless as a brood stimulant. But those who used it in the spring of 1956 when the weather was bad and natural pollen was scarce,



Will spring feeding bring this type of colony by honey flow time?

claim it made the difference between a honey crop and no honey crop. Those who plan to continue its use this spring plan to use it on all colonies when the first natural pollen from maples appears in early March, claiming that it works best when there is fresh pollen entering the hive. Mixed with very thick sugar solution, bees take it gladly and seem to utilize it in this section of Jersey.

In localities where spring robbing is a problem, small colonies can be fed Fuller candy and once again New Jersey beekeepers have made some important modifications of the original product to hasten and simplify Mr. Fuller's product. The Karo and thermometer are eliminated in this quick way: 12 pounds of sugar are added to three pints of water in a large bucket. Bring to a bubbling boil; without stirring add one-third teaspoonful of cream of tartar and bring to a rolling boil. Set off stove and allow to cool for half an hour, then stir until the solution begins to get cloudy. Pour into molds immediately.

For molds, an escape board with its center hole covered will hold about three pounds. If a larger quantity is wanted, a moving screen may be used if the wire is covered with wax paper or some leak proof plastic.

This candy is a much better stimulant than sugar syrup. But take heed if you do use it; be sure to check colonies often so they do not run out and start to starve. You'll be surprised how much they can consume, and how much brood will be raised on this.

These small colonies should be checked frequently during April and May to see that their build-up is satisfactory. New queens should be added if necessary, and any colonies going downhill should be united to save the stores from being wasted by robbing.

The frequent checking of these "pampered" colonies will teach a lot about beekeeping. You'll be able to decide whether the colony was worth saving when you get to harvest time, and most important, you'll be better able to evaluate your chances for success the following year.

"I picked them up at a farm sale. . . . . .Boy, did I get stung?"

The Food of the Drone Larvae*

MYKOLA H. HAYDAK
Department of Entomology and Economic Zoology, University of Minnesota, St. Paul
Reprinted from Annals Entomological Society of America, Vol. 50, No. 1, January 1957

THE DRONES are the males of the honeybee, produced from unfertilized eggs, and reared in cells larger than those used for rearing workers. The drone larvae grow larger and during their development receive considerably more food than do the worker larvae. According to Stabe (1930) the maximal weight attained by the drone larvae is 384.0 mg. as compared with 159.1 mg. for worker larvae. Planta (1888) weighed the food of larvae from drone cells and found an average of 9.6 mg. of food per cell, while there was only 1.7 mg. of food per worker cell. Values given by Aeppler (1922) correspond quite closely to those of Planta. Planta (1888) also called attention to the fact that the food of drone larvae more than 4 days old contained large amounts of pollen grains (15,000 pollen grains per mg.) while the food of worker larvae of the same age was almost pollen-free. The food of both worker and drone larvae under 4 days old was pollen free.

There has been very little investigation of the chemical composition of the food of the drone larvae. Following early work (Planta, 1888, 1889; Kohler, 1922; Kocher, 1924), Gontarski (1949) came to the conclusion that larval food varies considerably in its composition. He found ergosterol and biotin (0.7 mcg./g. dry matter) present in the drone larval food. More recently Gontarski (1954) has reported both qualitative and quantitative differences for food of worker vs. drone larvae and for young vs. old larvae. These data are based on both micro-chemical and electrophoretic determinations. There were two protein phases in the food of worker larvae two days old, while in the food of the drone larvae of the same age there were four protein phases, the same number as in the food of the queen larvae of the same age. Moreover, the food of the drone larvae regularly contained a definite crystallizable substance which was absent in the food of the worker larvae. According

* Paper No. 3515 Scientific Journal Series, Minnesota Agricultural Experiment Station. Accepted for publication March 27, 1956.

The writer is indebted to Dr. A. Glenn Richards and Dr. C. E. Mickel for the critical review of the manuscript.

Table I
Composition of Drone Larvae Food

Components	FRESH MATTER BASIS			DRY MATTER BASIS		
	Larvae 1-2 days old	Larvae 3-5 days old	Difference + — percent	Larvae 1-2 days old	Larvae 3-5 days old	Difference + — percent
Moisture percent	75.1	62.4	— 16.91			
Dry matter percent	24.9	37.6	+ 51.00			
Protein percent	15.38	11.19	— 27.25	61.77	29.76	— 51.82
Fats percent	0.71	0.58	— 18.31	2.80	1.54	— 45.0
Carbohydrates percent	7.53	24.94	+231.0	30.42	66.33	+118.0
Ash percent	1.28	0.89	— 30.47	5.01	2.37	— 52.69
pH	4.05	3.75				
Thiamine mcg./g	7.55	2.5	— 66.9	30.32	6.65	— 70.07
Riboflavin mcg./g	4.2	5.5	+ 31.4	16.87	14.63	— 13.28
Niacin mcg./g	57	40	— 29.28	228.9	109	— 52.40
Pantothenic acid mcg./g	99	46	— 53.53	397	125	— 68.41
Choline mcg./g	2.42	1.25	— 48.35	9.72	3.32	— 65.84
Folic acid mcg./g	0.16	1.02	+537.5	0.63	2.71	+330.0
Pyridoxine mcg./g	3.31	1.84	— 44.41	13.29	4.87	— 63.36
Biotin mcg./g	0.27	0.06	— 77.7	1.08	0.16	— 85.18

XUM

to Gontarski, these facts clearly indicate the specificity of the food of the worker and the drone larvae. Heuschler (1954) also found only 0.3 mg. acetylcholine per gram in the food of the drone larvae as compared to one mg. in that of the worker and the queen larvae. However, Rhein's (1951) experimental data show that normal drones can be produced by feeding drone larvae with the food of the worker larvae of corresponding age. This would indicate that both foods are physiologically equivalent.

The present study was undertaken to determine whether or not chemical changes in composition occurred between the food fed young and old drone larvae, and whether or not these were similar to previously reported differences for worker and queen larvae (Haydak 1943, 1950). Larval food was removed from drone combs of several normal colonies. The food of younger larvae (1 to 3 days of age) and that of older larvae (4 to 6 days old) was removed separately. The lower walls of the lowest row of brood cells were destroyed, the larvae taken out with a toothpick, and then the food removed with a royal jelly spoon. Successive rows were treated similarly. The food was stored in corked vials at 5°C. Only a single pooled sample was available for each type of food.

The two samples contrasted in appearance. The food of the younger drone larvae was milky-white, while that of older larvae was a dirty yellow-brown color. Microscopic examination showed no pollen or only occasional single pollen grains in the food of younger larvae but numerous pollen grains in the food of older larvae (av. 38 grains per microscope field with a 44x objective).

Chemical analyses were performed by the Wisconsin Alumni Research Foundation. Official Methods of Analysis, A.O.A.C., 7th Ed. (1950) was followed for determination of moisture, protein, fat, ash, and folic acid; the U.S.P. (1950) methods for thiamin, riboflavin and niacin; Horowitz and Beadle (1943) for choline; Atkins et al. (1943) for pyridoxine; Wright and Skeggs (1944) for biotin; Skeggs and Wright (1944) for pantothenic acid; and carbohydrate by difference.

Results of the analyses are presented in the Table I. The single analyses showed considerable differences. Protein and fat decreased but carbohydrate more than doubled. The B vitamins decreased except for riboflavin and folic acid which actually increased. In general, this is similar to less complete preliminary analyses made here in 1943 and 1944.

The increase in the carbohydrate content of the food of older drone larvae can be explained, as Planta has already pointed out, by an addition of honey to the diet of older drone larvae. The increase in the riboflavin and the folic acid content could have been due to the considerable addition of pollen, which, according to Vivino and Palmer (1944), is rich in riboflavin (18 mcg./g. of fresh matter) and is a good source of folic acid (3.4—6.8 mcg./g. of fresh matter — Weigand and Hoffmann, 1950). However, all the changes cannot be wholly substantiated by an addition of po'len to the food of the older drone larvae. While the increase in riboflavin and folic acid, and, possibly, the decrease in the pantothenic acid content can be satisfactorily explained on this basis, the decrease in other components suggest that there is a difference in the type of secretions elaborated in the pharyngeal glands of the nurse bees while feeding the older larvae.

It is difficult to explain how the nurse bees can produce such changes. Rosch (1925) reported that nurse bees of different ages feed larvae of different ages. One could readily imagine this resulting in difference in composition, but Lindauer (1952), Sakagami (1953) and Is'omina-Tsvetkova (1953) failed to find any age sequence in feeding larvae. Yet, although the number of analyses is small, it seems that a real difference exists in the food given to the younger and the older drone larvae. How this is brought about and what significance it has are both obscure.

Summary

The food of younger (1 to 3 days old) and older (4 to 6 days of age) drone larvae was collected separately from drone combs taken from outside colonies. A considerable change in the composition of the food of older as

compared with that of younger drone larvae was found. There was an increase in the dry matter, carbohydrates, riboflavin and folic acid. The sharpest decrease was in thiamin and biotin, followed by pantothenic acid, choline and pyridoxine. The smallest decrease was in the content of protein, fat, ash and niacin. The significance, if any, of the change in larvae food with age of drone larvae remains to be determined.

REFERENCES CITED

Aeppler, C. W. 1922. Tremendous growth force. Gleanings in Bee Culture. 50: 151–3.

Atkins, L., A. S. Shults, William L. Williams, and C. N. Frey. 1943. Yeast microbiological methods for determination of vitamins. Pyridoxine. Indust. and Engineer. Chem. Analyt. Ed. 15: 141–4.

Gontarski, H. 1949. Microchemische Futtersaftuntersuchungen und die Frage der Koniginentstehung. Hessische Biene 85(6) : 89–92.

1954. Untersuchungen ueber die Verwertung von Pollen und Hefe zur Pflege der Honigbiene. Zeitschr. Bienenforsch. 2 (6) : 161–80.

Haydak, M. H. 1943. Larval food and development of castes in the honeybee. Jour. Econ. Ent. 36: 778–92.

Haydak, M. H., and A. E. Vivino. 1950. The changes in the thiamine, riboflavin, niacin, and pantothenic acid content in the food of female honeybees during growth with a note on the vitamin K activity of royal jelly and beebread. Ann. Ent. Soc. America. 43: 361–7.

Henschler, D. Hocher Acetylcholingehalt von Bienenfuttersaften. Naturwiss. 41(6): 142.

Horowitz, N. H., and G. W. Beadle. 1943. A microbiological method for determination of choline by use of a mutant Neurospora. Jour. Biol. Chem. 150: 325–33.

Istomina-Tsvetkova, K. P. 1953. New facts about the behavior of bees. Pchelovodstvo 30(9): 15-23 (in Russian).

Kocher, V. 1942. Untersuchungen ueber den Aneuringehalt (Vitamin B_1) von Honig, Pollen und Futtersaft mit Hilfe des Phycomyces-testes. Beihefte z. Schweiz. Bztg. 1: 155–207.

Kohler, A. 1922. Neue Untersuchungen ueber den Futtersaft der Bienen. Verhandel. d. Deutsch. Zool. Ges. 27: 105–7.

Lindauer, M. 1953. Ein Beitrag zur Frage der Arbeitsteilung im Bienenstaat. Zeitschr. vergl. Physiol. 34: 299–345.

Planta, A. 1888-1889. Ueber den Futtersaft der Bienen. Zeitschr. Physiol. Chem. 12:327–54; 13: 552–61.

Rhein, W. 1951. Ueber die Ernaerung der Dronenmaden. Zeitschor. f. Bienenforsch. 1: 63–66.

Rosch, G. A. 1925. Untersuchungen ueber die Arbeitsteilung im Bienenstaat. Zeitschr. vergl. Physiol. 2:571–631.

Sakagami, S. F. 1953. Arbeitsteilung der Arbeiterinnen in einem Zwergfolk bestehend aus gleichartigen Folksgenossen. Jour. Fac. Sci. Hokkaido Univ. Ser. VI Zool. 11(3) : 343–400.

1953. Untersuchungen ueber die Arbeitsteilung in einem Zwergvolk der Honigbiene. Japanese Jour. Zool. 11(1) : 117–85.

Skeggs, H. R., and L. D. Wright. 1944. The use of Lactobacillus arabinosus in the microbiological determination of pantothenic acid. Jour. Bio. Chem. 156: 21–26.

Stable, H. A. 1930. The rate of grow.h of worker, drone and queen larvae of the honeybee. Jour. Econ. Ent. 23: 447–53.

Wright, L. D., and H. R. Skeggs. 1944. Determination of biotin with Lactobacillus arabinosus. Proc. Soc. Exptl. Biol. and Med. 56: 95–98.

Honey for Breakfast Week

April 6 - 12

HONEY FOR Breakfast Week will soon be here. It begins on Easter Sunday morning, April 6, this year.

If every beekeeper would purchase but 100 leaflets on Honey for Breakfast and distribute them by mail or attach to a container of Honey, at least 50 million families would hear about Honey. How many will do that much to promote the use of Honey For Breakfast?

Dr. Conrad Elvehjem (pronounced L.V.M.) is the new president of the University of Wisconsin. He is the man who isolated nicotinic acid and did the research on Honey for the A.H.I. He is an international authority on nutrition. He is a member of the Council on Foods and Nutrition of the A.M.A.

It has been said that the nutrition world revolves around him.

Last evening the Madison papers carried an article "Want Breakfast with New Prexy?" Dr. Elvehjem will open the campaign on "**Food Comes First**" and how delighted we are that the menu consists of orange juice, eggs scrambled in milk, bran muffins, **Honey**, butter and coffee. Pitchers of milk, platters of bacon and cheese, will be on the tables. **So Honey for Breakfast gets an early start!**

XUM

Don't Take Soil for Granted

advises DON COOKE, Milford, Ohio

SOIL IS NOT the dead, inert, simple thing often called "dirt". This was a mistaken concept of mine in my younger days when dad tried to tell me that soil productivity and honey production go hand in hand. I didn't believe that there was necessarily any connection.

Flowers of some kind bloom in about every nook and cranny of the world where there is a land mass. I thought since there were flowers there had to be nectar. Where there was nectar the bees could make honey. Therefore, according to my reasoning, honey could be produced almost anywhere a beekeeper chose to place his apiary.

My mistake? I took soil for granted! As you know, nectar is **not** present in each and every flower.

Let's look at the soils of my home state—Ohio. A brief geological history will show why the soils differ in various parts of the state. It will reflect the reason why more honey is produced in one area than in another.

The State of Ohio is located in the region of grey-brown podzolic soils, which is to say that the soils of Ohio have been developed in a humid, temperate climate under a deciduous forest vegetation. "Humid" means we get our share of rainfall. "Temperate" tells us we have a variety of temperature, hot in summer, freezing and thawing in winter; a condition which helped to

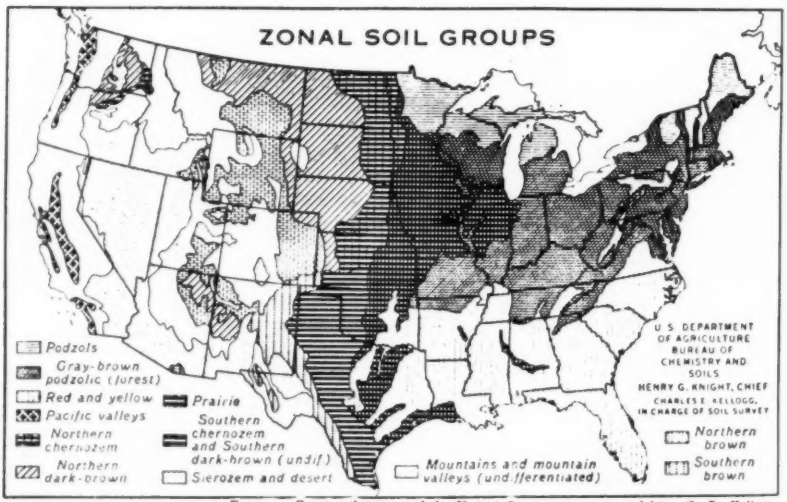
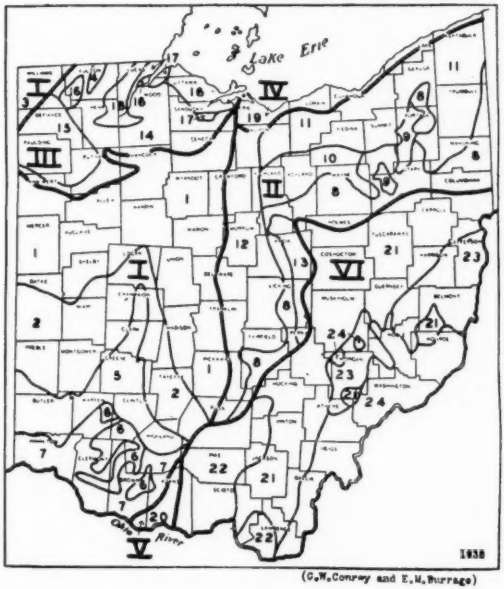


FIG. 19.—Great soil groups of the United States. [After C. E. Kellogg

Map from "Soils, Their Origin, Constitution and Classification," by Gilbert Wooding Robinson, John Wily and Sons, Inc., New York City.



Ohio map from "A Key to the Soils of Ohio", by G. W. Conrey, A. H. Paschall, E. M. Burrage (Spec. Circular No. 78—Ohio Agri. Exp. Sta. 1948) This is not marked copyrighted.

break up the rocky surface structure of mother earth. The "deciduous forest vegetation" is significant. The trees and plants shed their leaves as they completed their annual cycle. This insured the addition of organic matter to the basic minerals at least once a year. This contribution was extremely important.

In Ohio there are six major areas based on the character of the materials from which the soils were derived:

Area I, glacial limestone soils (west central and southwestern Ohio)
Area II, glacial sandstone and shale soils (northeastern and central sec.)
Area III, soils of the glacial lake region (northwestern Ohio)
Area IV, northeastern glacial lake soils (Erie County and a narrow strip east bordering Lake Erie)
Area V, residual limestone and shale soils (southeastern Brown County and Central Adams County)
Area VI, residual sandstone, and shale soils (southeastern Ohio including the beautiful "hill country")

In general, the most productive soils of the state are near Toledo or the northwestern section. The soils of the west-central area are also very good. Northwestern and Central Ohio would be progressively less productive, with southwestern Ohio soils following, and least productive are the soils of the southeastern hills. The silt loam of the Adams County area is more productive than the soils bordering it.

It is interesting to note that the glacial soils of Ohio are more productive than the southeastern residual soils. The southwestern corner of Ohio was less fortunate than its northern neighbors in its gift of glacial deposits. Southwestern Ohio soils are traced to the "Illinoian Drift". Later the "Wisconsin Drift" left deposits in Butler, northern Warren County and areas north, but the glacier melted before its benefits could be bestowed on Hamilton and Clermont Counties.

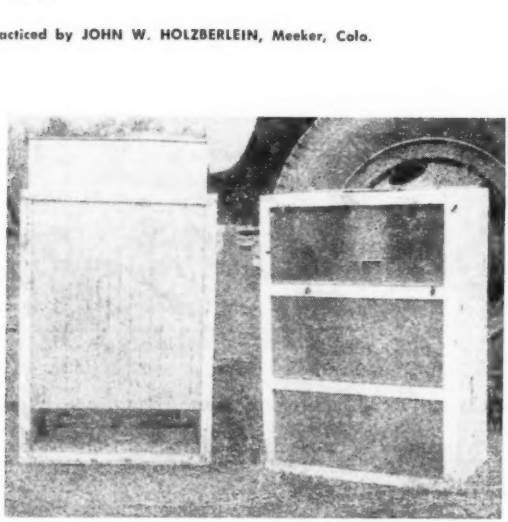
Let us draw another parallel. The most lucrative soils of Ohio have the darkest color. The light-colored soil is not as profitable. The gray soils are least productive. The color designations in general are indicative of the amount of organic matter present and show how important it is to the farmer to contain a high percentage of vege-

(Continued on page 250)

Better Queens

The Mating Nuclei

as practiced by JOHN W. HOLZBERLEIN, Meeker, Colo.



No. 1. Two of our "bee boxes", showing screen on one side and metal slide on the other. Outside dimensions are the same as an eight-frame hive.

(Continued from March)

IN SELECTING the stock and producing the queen cells we have done about all man can do to assist Nature to **develop** a good queen, but there is still much that can be done to insure that she **remains good** throughout her development. For this reason the setting up and maintainance of mating nuclei is an important step. There are a number of ways that nuclei may be established. Again, avoiding unnecessary labor is important, and we will try to discuss only those methods that are practical from a labor standpoint and yet result in the establishment of a satisfactory "nuc".

There are many styles of "nucs", single, double, triple, and even quadruple units, with frames of all sizes from the standard Hoffman brood frame down to the "baby nuc" size frame which is not much larger than a post card. Any one of these can accomplish the desired purpose. We use our standard length shallow frame (6¼" depth) because it is common to all our equipment and in all ways interchangeable. We use these in both single and double units. Nuclei can otherwise be divided into two main groups, viz., those made with brood and those made without. Either can be satisfactorily used, and each has its advantages and disadvantages.

About the only disadvantage that we

see to the use of the "nuc" with brood is that in order to establish them, combs containing brood must be taken from some other colony. Whole colonies may be de-queened and then later split up into as many nuclei as the strength of the colony will permit. The main advantage to this type "nuc" is that they "stay put" better with less tendency to drift. They do not need to be confined, therefore it is not necessary that bee-tight equipment be used. Furthermore, if the first cell should happen to "miss" one will still have a "nuc" and a second chance.

The broodless "nuc" has the advantage of needing only the equipment, feed, bulk bees, and queen cells. With these four items one is in business on short notice. By shaking bees time after time from your supporting colonies quite a few more "nucs" can be made up than where both bees and brood are used. The disadvantage is that the "nuc" must be confined until after the virgin has emerged and therefore the equipment must be bee-tight. And if a miss occurs the "nuc" is lost and all one can do is to start over.

No. 2. One of our "brood piles" with four supers of brood and honey in place, "bee box" on top with metal slide removed permitting the bees to cluster on combs below.

Before describing the system we use let us consider some of the important features of a good mating nucleus. Since it is too small in numbers to be much of a nectar-gathering unit it should be well provided with feed so as to be rather independent of the weather. This can best be done by giving combs of sealed honey. Feeding heavy sugar syrup with a division-board feeder will do the job as well, only more work is involved. The nucleus should contain enough bees so that brood rearing temperature can be maintained inside its cluster. Chilling of the cell or the virgin at times when the outside temperatures may drop abnormally is one of the most common causes of inferior queens. For this reason alone we believe that "nucs" should be made up with not less than three-fourths to one pound of bees, depending on the type of equipment used. Nuclei of sufficient strength are less susceptible to robbing. Since Nosema disease is commonly found in nuclei everywhere, especially in early spring, the larger the population the lower the degree of infection seems to be, and consequently the smaller the chance of infecting the queen. For these reasons we do not use the "baby nuc" although under ideal conditions and with proper management good queens may be mated in them.

There are some miscellaneous items that we feel are worthy of mention. One of these is the size and location of the flight hole in mating nuclei. A round hole about half way up the side of the hive seems best. Under ordinary conditions a ½" or ⅝" auger hole seems to be large enough. Where we have tried larger holes we have not had the success that we have had with the smaller ones. To facilitate ventilation and prevent any accumulation of water in the case of leaky covers we have a ⅞" auger hole which is screened in the bottom of each "nuc" at the end opposite the flight hole. It is desirable to

XUM

No. 3. A group of double nucs. These are made up with just two combs on each side but as they strengthen may be expanded to four combs each.

have shade for nuclei, if at all possible. The ideal situation is to have them in the rays of the morning sun but where they will be shaded during the middle of the day. It is next to impossible to provide such locations in all cases, however, it is worth thinking about and doing whenever practicable.

We believe the facing of the entrances is important. Since we now believe that bees find their directions by polaroid light it seems logical to locate the nuclei so that the entrances face at all angles to the sun, no two side-by-side being the same. This seems to help prevent flying virgins from returning to the wrong doorway. Some system of marking the "nucs" should be used so that the date when the cell was put in can be accurately checked. It is important to be able to tell at a glance just when queens should be laying and a marking system avoids guessing and confusion.

The system we have worked out and found most satisfactory calls for a small frame of open brood and about one pound of bees for each "nuc". By spreading our nuc-making operation over a little more than a month we are able to make an average of 10 nuclei from each supporting colony. By starting about the first of March we are able to produce our queens when they are in the greatest demand and still get back to Colorado with the 600 queens we customarily rear for our own use in time to make a honey crop there. We still have the same number of colonies left in the queen-rearing location that we had to start though they are much smaller in population and greatly depleted in stores. They have accomplished their purpose, however, and are ready to be requeened so that they may build up and fill up in preparation for another season.

It is important to avoid taking the queen when the brood is taken from the supporting colonies. Small patches of open brood are to be preferred for "nuc" making. A spot no larger than the hand is about ideal. The small cluster can care for this amount of brood when a larger one might become chilled and lost, furthermore this will deplete the supporting colony far less than if full combs were taken. Some open larvae should be present in each comb as queenless bees will not abandon brood of this age like they will sealed brood or eggs. If the rest of the comb is filled with honey so much the better, though the full comb of honey to make up the "nuc" usually comes from a supply stored for that purpose.

The Brood Pile

For each group of 16 nuclei to be made up we set up what we call a "brood pile". It is really a pile of brood and honey as each "nuc" gets a full comb of honey as well as its small comb of brood. We use eight-frame equipment in our extra colonies used in queen rearing. This means that a "brood pile" will contain four supers each containing four frames of brood in the center and four frames of honey, two on each side. This stack is placed near the center of where the "nucs" will be located and the extra bees added on top at once. For each brood pile we have a bee box as shown in picture No. 1. By the use of a regular shaker box we take bees from strong colonies either at the yard where the brood is taken or at some other location.

We put about 12 pounds of bees into each box and then take them along with the brood to the place where the brood piles are to be set up. As the supers of brood and honey are set on the bottom board the bees on them are lightly sprayed with thin sugar syrup. We then spray the extra bees in the bee box through the screen and the feed can hole until they are well dampened. The box of bees is set on top of the stack with the slide door down, the slide pulled out, and the job is done. (Picture No. 2.)

While broodless bees recognize their queenlessness in an hour or two and will readily accept a queen cell at that time, bees with brood take much longer to become fully queenless. Under favorable conditions queenless bees with brood may accept the queen cell in two days. But waiting four or six days is much safer and usually results in much better acceptance of the grafted cells. Even to wait eight days is all right but after that time there is danger that some of the emergency cells started by the bees may emerge and the virgins destroy the grafted cell one gives them. For this reason we try to set up our brood piles six days before the cells are ready and plan to split them up into "nucs" on the evening of the fourth or fifth day. This gives them some time to get settled before the cells are given.

To make up the nuclei we first locate the empty boxes in the positions they will occupy as convenient to the brood piles as possible and remove their covers. At dusk after giving a little smoke we set two combs of bees, one with brood and one with honey, into each "nuc" box. Two men can set out

No. 4. A large group of "transport nucs" showing the irregular rows used.

a hundred "nucs" by this method in about an hour with the minimum of disturbance. Since the bees are thoroughly queenless by this time and have all night to settle down there is very little drifting. If there does occur a noticeable difference in strength one can trade places between the strong ones and the weak ones at the time the cells are given, but this is seldom necessary if one is careful to set no "nuc" close to the location of the old brood pile. Queenless bees do not fly much, but if the old location is occupied it will get most of the flying bees, however if all nuclei are set a few feet away and facing in different directions there will be little difference in strength.

The queen cells may be given to these nuclei the morning after they are set out, and two or three days after this they may be checked for virgins if time permits. Ordinarily this is not necessary if the work is properly done for it is not uncommon to have 100 per cent acceptance of the cells by this method. The cells should be given to the nuclei as soon as possible after removal from the finisher. They should be handled carefully and protected from cold and the direct rays of the sun. Each cell should be firmly pressed on the comb near the center of the brood area. One should be careful that there is no bee under it, but that it is firmly against the wax, for if it is dislodged and falls to the bottom it is usually lost. If it is properly placed the bees will fasten it securely in a matter of minutes.

Summing up the important factors in making up this type mating nucleus, they are: Giving enough time to insure the acceptance of the cells, enough bees to provide sufficient warmth, and ample feed, even in time of a honey flow. Probably more cells and more "nucs" are lost from a lack of food than from any other cause.

It is necessary to take all precaution against robbing. This is one good reason for the small flight hole. Much of early queen rearing must be done when no nectar is available and especially where full strength colonies are nearby, as the threat of robbing is always present.

Great care should be taken to choose a location for queen rearing where early sources of nectar and pollen are present. But all these good places are subject to the whims of the weather, and once the work has been begun one cannot stop for bad weather. All that can be done is to make the best of it. The easiest way to do this is to make the bees independent of it as nearly as possible by the provision of abundant feed.

Bad weather need not have much effect on queen rearing except in the matter of matings. Here we are entirely at its mercy, and if there are not enough warm, sunny hours when the drones are flying at the time the virgin is ready to take her nuptial flight, it is just "too bad". The best queens are those that mate early. I believe that there can be little argument with that statement. I am also certain that the best queens mate several times and most likely over a period of several days. When the mating season is postponed or interrupted by bad weather I am sure that the resulting queen is not as good as one whose honeymoon took place on time. Although many of these "short mated" queens are normal in appearance and in early performance, they are not long lived and may even be superseded in their first year. There is no way to distinguish individuals on the borderline, and if a young queen lays on time, distributes her eggs normally, and comes up to one's standards in appearance there is little that one can do but to assume that she will be a good one.

We say "lay on time". This time may vary with the season, but one must set up some sort of standards. In the early season when days are comparatively short and nights are cool, young queens will not often lay before the 12th or 13th day after an 11-day cell is put into the "nuc". If she has not begun to lay by the 15th day we do not consider it safe to use her. As the season progresses queens will be found laying on the 10th day, and we have found them laying as early as the eighth day. Warm weather promotes early development with perhaps several matings on the same day and usually results in the best of queens other things being equal.

To properly maintain nuclei the queens should be caught out when they have been laying no more than three

(Continued on page 253)

Hive Box Manipulation

E. G. KYTE, Fairview, Pa.

I WONDER if there are many beekeepers who practice the yearly rotation of the brood chamber or of the brood frames in each colony? I present this as a question, as I have never heard of this system being used nor have I ever seen any mention of it in the bee journals.

During my more than 40 years' experience as a beekeeper I have used about every form of hive manipulation for swarm prevention and colony build-up, and finally settled upon the following method which I have used for several years and have found it to be most satisfactory.

All my colonies are managed in the standard two-story ten-frame brood chamber hives. I like to leave the winter cases on the hives as long as possible in the spring or until the bees need more room and attention, which is about May 15th. In this locality, as soon as the hives are all out of the winter cases, each strong or normal colony is given another body of brood combs placing it on top. The colonies are now three-story brood-chamber hives as the queen and bees soon occupy the newly added chamber as it consists mostly of the older and darker combs from which the honey was extracted the previous year.

About 10 days or two weeks later the colonies are due for their most important manipulation. Queen excluders are now distributed one at each hive, then the top and middle brood chambers are lifted off and placed on the rim of the upturned telescope cover, then the lower brood chamber is removed from the bottom board and stood on its end on the ground near by, while the bottom board is being cleaned of any debris or dead bees, or it is replaced with a new bottom board if needed. Then the two brood chambers on the up-turned cover are placed on the bottom board in the reverse order from which they were removed, thus bringing what was the middle (or the second story winter brood chamber) next to the bottom board. The queen excluder is now placed on top of these two brood chambers and what was formerly the lower brood chamber is placed on top of the excluder shifting same slightly to the back to form an entrance in front then replacing the covers. No search is made for the queen at this time but if she should happen to be seen she is placed below the excluder.

In a few days or a week later the colonies are examined or gone over again to see that all queens are placed below the queen excluders, as this upper hive body is now to become a super for the storage of honey during the season. It is best to space the combs or frames to eight or nine in each super and make sure this upper body has an entrance or opening to the outside for the escape of the drones that would be trapped above the excluder.

This manipulation applies only to the normal or stronger colonies and if queen cells are found at the time of manipulation the colony will require additional attention to prevent swarming, such as cutting out queen cells or dividing by removing most of the brood.

This system of management has several advantages and is especially recommended for the beekeeper who wishes to keep his bees and equipment in the best shape. It brings each hive body with its frames into the honey house every third season, where, after the honey has been extracted the frames can be cleaned and repaired and the hive body also cleaned and repainted if necessary. It also presents an opportunity of getting rid of some of the older and defective brood combs by melting them into beeswax.

It also places most of the old left-over winter stores (which are usually found in the upper story) in the lowest part of the hive where it is used up by the bees and does not get into the supers.

It gives an opportunity to clean and renew bottom boards which really do need attention at times. It also helps prevent swarming by giving the colonies extra brood space at the time it is most needed. It also works for more perfect brood combs or laying space for the queen.

A PLACE for YOUNG PEOPLE in Beekeeping

by ROBERT M. MEAD
White River Junction, Vt.

THE BEEKEEPING industry like every other enterprise has a constant need for new talent if it is to be kept alive and growing. Looking around at established beekeepers I find that an alarming number of them are middle-aged and older. They are good beekeepers but set in their ways and new ideas often get thrown out the window with hardly a glance. And this in an industry that desperately needs new ideas, especially in the field of marketing.

The big question is "What has the beekeeping industry got that will attract the right type of young people?" To find an answer to that question in a day when there is keen competition for young minds and young ambitions requires some digging. There are some discouraging facts and we might as well face them to begin with.

I checked, during the past twelve months, articles in ten national magazines giving advice to young people on careers. Only a third of them even mentioned agriculture and then they placed it in an unfavorable position. None of the writers or editorial boards that prepared the articles even mentioned beekeeping. Although we hate to face it, there is good reason for their attitude. Today almost any young man or woman can take four years of college and on graduation step into both an easier and better-paying job than most beekeeping positions can even hope to offer. Not only is that true today but it is very apt to become more true tomorrow. The demand is for college graduates in the fields of science and engineering. It is even likely as this is written that the government will give some form of financial help to those willing to take up science studies.

With competition as harsh as this what can the field of beekeeping offer? Well, our case is far from hopeless. Beekeeping offers some very real rewards and it is well for young people who have some interest in bees to understand just what these rewards are.

In the first place we are not all born quite equal when it comes to ability and temperament. Space travel may be the coming thing but not every young person can be a rocket engineer nor is every boy or girl suited to the demands and sacrifices of the world of science. Some of them must in the very nature of things be satisfied with somewhat less spectacular jobs. The question is what job, and what are the rewards?

There are some very real rewards in beekeeping but they are for people who do not care to have their names in headlines every day and who can live in some happiness on less than five figure incomes. For instance; I have always thought of beekeeping as being an ideal enterprise for the husband and wife combination. In fact, some of the most successful beekeepers I know operate on this basis with the man doing the heaviest work and the wife doing jobs like packing and marketing. Their incomes are not spectacular but they live comfortably. For the most part they work long hard hours during their busy season but they also have a slack season during which they can just take it easy or travel if they wish. A project such as this is well worth the consideration of young couples who like to work together. It is a healthy outdoor life with less strain than in the "dog eat dog" competition that exists in the modern tempo of most business.

Besides the husband and wife enterprise there are other worthwhile chances in the beekeeping industry. There is the constantly growing field of

pollination in which I believe there is room for young men who enjoy work and who have the ability to look at a problem and handle it better than it is now being handled. There are salaried jobs open in the field of teaching, bee inspection and field work. The number of such openings is naturally limited but again the need is for fresh minds and youthful enthusiasm.

There is always the challenge of simply producing honey and doing a better job of it than beekeepers are now doing. The trend, and it is a very definite trend, is for one beekeeper to handle many more colonies than the old timer could possibly take care of. I believe this trend will continue. The problem here is to use modern equipment to its very best advantage; to do the things that need to be done and to skip those manipulations that are mostly tradition and habit. I have no doubt that somewhere there is a young man who can go out and produce a pound of honey for less money than it has ever been done before and we need such men. It is more efficient production that has revived many an industry that seemed to be sliding back into oblivion.

The beekeeping industry needs salesmen. I mean real salesmen. For years I have been a honey salesman and many of my friends are honey salesmen but we all have one thing in common. We sell honey to people who want honey. What the industry needs is salesmen capable of developing markets, of finding new uses for honey, of convincing retail markets that honey is a good item for them to handle, and then setting up displays that will do the job. Our whole marketing system needs bringing up to date but I don't see how old timers like myself are going to do it. It needs young men with a fresh approach who can see over the obstacles that stop the rest of us cold.

What is the best way for the interested young person to get into beekeeping? Study of course is essential. A few state colleges offer regular courses in beekeeping and perhaps more offer short intensified courses from time to time that are a big help. One of the good things about beekeeping is that the young person who is seriously interested can get into it without the student or his parents spending anywhere near the amount of money required for four years of regular college work. In fact, it is not only possible but often desirable for the student beekeeper to be earning money all the time he is studying beekeeping.

This may be accomplished in several ways. The number of books on beekeeping subjects is now large and covers every possible phase of beekeeping, bee behavior, and inter-related subjects. These books can be purchased for a moderate sum considering education costs in other fields but even if they cannot be purchased they can usually be borrowed or rented. While absorbing the vast volume of information in these books there is no reason why the student cannot hold down a modest job suited to whatever talents he may already have.

I know that some one is going to say that practical experience is more important than book learning but I am coming to that. I believe that study plus practical experience is the best preparation. Not everything you read is going to help you but nevertheless it is important to read it if only to stimulate your own thinking. When it comes to practical experience by far the best method is to work for an established commercial beekeeper. Such work may be almost too much of an eye opener for some students but it is the best way to get away from dreaming and down to the realities of beekeeping life. And as almost all commercial men differ a little in their methods the serious student will need at least two season's work, each season with a different beekeeper, to begin to learn what it is all about.

Finally, if time and money are available, I would have the student beekeeper operating a few colonies of his own all the time he is learning from books and other beekeepers. Here he can make his errors in management and be confused when what he sees does not correspond with what he has read but if he is lucky he can make his worst mistakes and get them over with before he is deep into the business.

In addition if the student beekeeper has any knack at all for selling he should spend a season or part of a season selling honey or in company with someone selling honey. He should learn the preferences in his locality as to flavor and container sizes. If after

(Continued on page 249)

FROM Foreign LANDS

Translated and Edited by ERIKA BARTH

The Oldest Bee Journal in the World:

THERE ARE only a few bee journals that are nearing their 100th birthday, but in Germany we find what is probably the oldest bee journal in the world. This year the RHEINISCHE BIENENZEITUNG (The Rhein Bee Journal) is starting its 109th year of continuous publication under the editorship of Joseph Grunow, Berg. Gladbach.

Theory and Practice:

BEEKEEPERS ARE a funny people (and as some beekeeper has said, "You don't have to be crazy to keep bees but it helps") — they have learned very little from their insect friends. Our bees show us again and again that only by working together does society benefit. But keepers of bees believe that they have to work by themselves, only to find out that they didn't really achieve any great goals. All must have their own type of hive, their own race of bees, their own hybrids, and their own methods of working bees..... **but no one does anything about the preservation of honey plants.**

Von Kleeman, "Nordwestdeutsche Imkerzeitung".

Misbranding Royal Jelly Brings Legal Action and Fine to Beekeeper:

THE PRODUCERS of "Apiserum", a royal jelly product produced in Australia, advertised their substance as a five-guinea, 24-day course of rejuvenation for women. The advertisement offered a look younger, feel younger treatment for women.....but a **man** answered the advertisement. His name was Mr. A. E. Waller, Chief Inspector of weights and measures, and he was very intrigued by Apiserum.

After a subsequent investigation, the manufacturers of Apiserum were brought to court. And, during the trial, an analyst told the court, "If one took the whole 24 day's food at one meal it would provide the calory value of a little lump of sugar." The magistrates fined the producer of Apiserum a total of 70 pounds (in excess of $200) on four charges arising out of misleading advertising and failing to specify minimum quantities of ingredients. A fifth charge was dismissed.

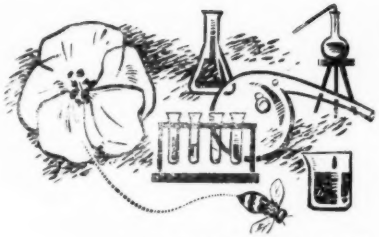
American royal jelly producers should take note of the editorial matter following this report for as the Editor says: "It is unfortunate that such misleading advertising has been used for a product of the bees which is attracting such world wide attention and while so much experimentation and research is being made to find out the true value for human use. A reputation for royal jelly as a human benefactor will only be established when proved by medical science. We believe that most beekeepers are interested in producing royal jelly firstly because of its apparent benefit to mankind (including themselves in many cases), and secondly as a source of revenue from a by-product of their industry, and they don't want to see a good thing damned by malpractice."

The Australasian Beekeeper.

Medical Review on Royal Jelly:

THE BRITISH MEDICAL JOURNAL (London) of May 11, 1957, gives the composition of royal jelly, but doubts the substantiation of claims for royal jelly as a human rejuvenator in a reply in its "Any Questions" column. The medical publication states that the theoretical basis for the use of royal jelly in man rests on a hypothesis which even in bees is as yet unproved. It will be extremely surprising, therefore, if the startling claims made for royal jelly as a human rejuvenator are eventually substantiated.

The Australasian Beekeeper.



Research Review

by DR. ROGER A. MORSE

New York State Extension Apiarist
Ithaca, New York

The Mating of Honeybees:

THE QUESTION asking how a queen may mate with several drones in the short space of 15 minutes is discussed in a recent paper from England. Ten years ago we were all sure the queen mated once, or at most twice. We now find mating and separation takes place very rapidly while the queen and drone are in flight. Despite the fact that the queen is carrying the mating sign she may mate again.

Many questions remain unanswered and Dr. R. E. Snodgrass, U. S. National Museum, Washington 25, D. C., indicated not too long ago that he would like an expended drone or a pair still in copulation. These should be preserved in 70 or 80 per cent alcohol and be sent directly to him.

WOYKE, J. and F. RUTTNER. An anatomical study of the mating process in the honeybee. Bee World 39:3-18. 1958.

Changing the Bee:

WE ARE sometimes embarrassed at the lack of change in our industry. The answer to this type of criticism has been that we are working with the same bee as existed a century ago. That a major change is in the making is the underlying theme of a review of honeybee genetics and breeding by Dr. Walter Rothenbuhler of Ames, Iowa.

In a recent paper he cites the experimental work accomplished to date and also some practical work (some of which is unpublished) on disease resistance by the late Dr. O. W. Park. In one case he cited a beekeeper has deliberately exposed an apiary to American foulbrood for over 20 years. While many colonies have been lost the result has been that many colonies are now highly disease resistant. Queens bred from this line continue to show high resistance.

Not all research is so immediately practical. The development of a disease resistant line is also a tool which can be used to learn more about the bee and help to bring about more change. Disease resistance is not the only goal and Dr. Rothenbuhler cites several other important changes which breeding can bring about.

ROTHENBUHLER, WALTER C. Genetics and breeding of the honeybee. Annual Review of Entomology 3:161-180. 1958.

Acarine Disease:

ACARINE DISEASE is a disease of adult bees. It is caused by a small mite, an insect-like thing with eight legs. The mite lives in the breathing tubes of the honeybee and blocks these tubes so that the bee eventually dies.

The disease is common in England and the rest of Europe and since 1947 has been found in South America. The Apiary Inspectors of America and the American Beekeeping Federation have just formed a joint committee to investigate the spread of the mite.

A recent article in the British Bee Journal reviews the two best methods of control. Both involve fumigating the bees so that the mites and not the bees are killed. This is a tricky job at best. Let us hope American beekeepers continue to support their quarantine laws to keep the pest out of the country. Consensus of opinion is that American foulbrood is a minor problem compared with acarine disease.

Anonymous. How to combat Acarine. British Bee Journal 86:31. 1958.

For the Easter Dinner

MRS. BENJ. NIELSEN
Aurora, Nebraska

Honey-glazed ham and honied sweet potatoes for Easter dinner.—Photo courtesy Kellogg Co.

"THE BESTEST ham what am" when it is cooked a la honey! Meat cookery is one branch of cooking that it is difficult to work into the honeyway preparation. But with ham, Nature's golden sweet produces flavor without peer. So let's plan on it for the Easter dinner.

And, of course, ham calls for sweet potatoes. Those chosen this month have lots of eye appeal and a scrumptious taste. You may like to vary this recipe by mashing the cooked potatoes and shaping portions around a large marshmallow, then proceeding as in the given recipe. Nice surprise when you bite into the dainty crumb-coated tidbits.

Delightful hot, this honey flavored ham is superb sliced cold for the evening meal and days thereafter. Accompany these tender succulent slices with colorful honey carrot muffins. Um! Good eating!

Honey Baked Ham

Place whole or half cured ham, fat side up, on a rack in an open roasting pan; roast uncovered, in slow oven, 300 degrees until done; allow 30 minutes per pound for half ham, 25 minutes per pound for 10 to 12-pound ham. Meat thermometer should register 160 degrees. About one hour before ham is done carefully remove rind, leaving collar around shank bone. Mark fat surface in squares. Rub surface with mustard. Combine ham drippings with 1 cup honey, 1 cup pineapple juice, and ½ cup brown sugar. Pour over ham and in each square place a whole clove. Continue baking, basting frequently.

Honied Sweet Potatoes

Six medium-sized sweet potatoes, ¾ cup honey, 4 cups corn flakes, 1 teaspoon salt, 2 tablespoons butter, and paprika.

Scrub potatoes thoroughly; cook in boiling water until tender. Peel and cut into halves lengthwise. Heat honey in small sauce pan. Crush corn flakes slightly; mix with salt. Dip potatoes in honey; roll in corn flake crumbs. Place in greased shallow pan; dot with butter and sprinkle with paprika. Drizzle any remaining honey over potatoes. Bake in hot oven 425 degrees F., about 25 minutes. Yield: 6 servings.

Honey Carrot Muffins

Two cups sifted flour, 2½ teaspoons baking powder, 1 teaspoon salt, 1 cup carrot juice, 1 egg, well beaten, 2 tablespoons honey, ¼ cup melted shortening, and ½ cup raisins, optional.

Sift dry ingredients together. Add carrot juice and honey to beaten egg. Mix well. Add to dry ingredients, stirring only until flour is dampened. Add melted shortening and raisins. Fill well-greased muffin tins ⅔ full. Bake in moderately hot oven, 425 degrees F., about 25 to 30 minutes.

Live and Learn

by Propolis Pete

THIS IS WRITTEN March 1st, even though you won't be reading it until April. Today my bees had the first good flight since the middle of January. Did you ever see brown snow? Some of the colonies weren't flying too good. Sometimes that is a bad sign; sometimes not. Some colonies go out, do what they have to do, and go back to bed without making much of a fuss. Others make a real holiday out of it, yet when the time comes to look them over you find that practically every bee in the hive was in front of it. From now on I will be on pins and needles to get in there and see what is really what. And I can do it now, because of that new special wrapping. You can peek without any unwrapping at all.

How did the bees come through the winter? That's a question. Some beekeepers that I know claim that any hive with two bees and a queen wintered through. I figure that a colony that barely makes it is worse than a colony that conks out. If they are gone, you replace them. If they are weak, you nurse them, and spend more time and trouble trying to build them up than you would on a new strong package that is just rarin' to go. I don't believe in uniting colonies in the fall, but I do very much believe in uniting the weak sisters in the spring, and replacing them with new packages if you can get them in time.

One of the troubles with that is that by the time you have decided to replace them, it is too late to get your packages in time. This spring especially, I have an idea that the wise guys who placed their orders are going to be thankful that they did. I generally send in my order right after the new year, but this year I wasn't able to do it. Even now, I still don't know how many, if any, to order. I don't have the equipment to put in new packages if none of my present spread needs replacement.

This has been a pretty tough winter for the package men. According to the papers, it is only now that the warm weather that they generally start to get in early February is showing up. The temperatures reported for the breeding areas have been so low, that I doubt very much if the bees could get the pollen and early nectar that would build up the brood nests to the point that the bees could be shaken into packages. And with that cold weather, it must be quite a problem to rear queens. So, maybe it is a good thing that I am not expecting any now. I try to get my packages shipped as soon after the first of April as possible, because the weather here is mild enough for them to build up if I keep them well fed on the days that they can't fly out. This year I don't know when things will start to open up. The pussy willows haven't even started to spread, the silver maples don't have those bulges on the twigs that show that the blooms will be out any nice day. Crocus, the first thing that the bees will be able to work around here (and there is precious little of it) isn't even peeking above ground, whereas in other years it has been blooming by now.

You never can tell. Nature has a way of evening things up. A crop failure in one plant may bring a surplus in another that more than balances the loss. This has been the toughest winter here in 24 years. In fact, the last real toughy was the first year that I kept bees and I didn't know then that it was a tough one. Yet the following year I got the biggest average per colony in my beekeeping career. I know that it wasn't skill, so it was either beginners' luck or the cold winter and late spring that set the stage for a lallapaloosa of a honey flow.

With any kind of a break on the temperature and sunshine, it could be that we will get a bumper crop. The water table has never been higher, the cold weather and snow cover has prevented heaving of the ground, and if we keep the bees full of feed it well could be that we will get what we are always looking for.

I suppose that some of the Gloomy Gusses will argue that if they get a big crop it will mean a lot of hard work and low prices. Well, we will see what we will see. I never have trouble getting rid of my crop at good prices, al-

(Continued on page 253)

XUM

Editorials

Honey for Breakfast Week — April 6-12

IT WOULD BE interesting to actually know how many beekeepers' families use honey for breakfast — not only during Honey for Breakfast Week but throughout the year. They really should — to set a good example for others.

Assuming that there are approximately 500,000 beekeepers in the U. S. (no one seems to know exactly how many there are) and each family would use one pound of honey a week for 52 weeks, that would amount to 26,000,000 pounds, which would reduce our present surplus measurably.

The Dempsey family of eight, in Massachusetts, used over 300 pounds a year (see August, 1938, Gleanings, page 489). If all beekeepers' families ate honey like the Dempseys, approximately one pound a day, there would be very little left over to sell.

Honey for Breakfast Week, initiated by the American Honey Institute some years ago provides an opportunity to concentrate on publicizing and selling honey during the season of the year when people should be thinking about honey.

Let's cooperate with the American Honey Institute and raise the per capita consumption of honey to a higher level.

Beekeepers Can't Control the Weather

THE UNSEASONABLY cold weather that prevailed in most of the South during February and early March has worked a hardship on bee and queen shippers. Queen breeders must have seasonable weather early in the spring to graft queen cells and make up queen mating nuclei.

Beekeepers in the North who depend on package bees to start colonies will have to wait until they are available. Shippers will do their best to serve their customers. It is hoped that when suitable weather for producing and shipping bees does arrive, that at least part of the lost time may be made up.

Honey Crop for 1957 Up 14 Per Cent

ACCORDING TO the 1957 honey annual summary put out by the United States Department of Agriculture, Washington, D. C., as of January 28, 1958, the honey production in the United States for 1957 was 242,000,000 pounds which is slightly below the five-year average but 14 per cent more than the 1956 crop. The beeswax production, 4,476,000 pounds, was nearly nine per cent greater than in 1956.

The number of colonies in the United States during 1957 was 5,412,000 as compared with 5,315,000 in 1956. The per colony production in 1957 was 40.8 pounds while in 1956 it was 40.2 pounds per colony.

There appears to be a considerable amount of honey unsold. We learned of one producer in the West who has on hand 2,200 60-pound cans. According to late reports the retail honey market seems to be fairly active while the wholesale market is rather sluggish.

We must keep in mind that it will be four or five months before the clover crop in the northern states comes onto the market. During this time a considerable amount of honey will be needed to supply the demand. It does not seem likely that there will be any great amount carried over when the new crop comes on the market.

New Research Editor

GLEANINGS IS very proud to announce the addition of Dr. Roger Morse, New York State Extension Apiarist, as Research Editor. Dr. Morse's task will be to keep our readers up to date on the latest research developments in the world of beekeeping. The scientific data will be translated into layman's language to make it interesting and informative to all Gleanings readers. Dr. Morse is well qualified to hold the title of Research Editor, having received his Ph.D. degree in Apiculture and Economic Entomology as a student of Dr. E. J. Dyce at Cornell University. He went on to become an Entomologist for the State Plant Board of Florida and later accepted the post of Entomologist for the Waltham Field Station of Massachusetts which led ultimately to the appointment as Extension Apiarist at Cornell University.

You will notice Dr. Morse's contribution to this issue of Gleanings on page 221.

Bigger Honey Crops with Gibberellic Acid?

GIBBERELLIC ACID is a plant growth regulator which has received a great deal of nationwide publicity in the last few years. If the proper amount is sprayed on a plant at a crucial point in its development, the plant will grow two or three times its normal size. Besides causing a plant to become a giant, Gibberellic acid is also capable of stimulating plants to become active in periods in which they are normally dormant. Some examples of this is that Gibberellic acid can cause grass to grow in the wintertime and flowers to bloom earlier than normal. Gibberellic acid is definitely still in the experimental stage.

At present the Department of Plant and Physiology of the Agricultural Experiment Station, Rutgers, is conducting studies to determine the effect of Gibberellic acid on fruits, germination and seedling growth of grain, and the rooting response of soft and hard wood. It would seem since Gibberellic acid has such a pronounced effect on the physical structure of plants, it might also have a profound effect on the nectar secretion capabilities of the blossoms. The possibility should at least be investigated.

The result of such an investigation might establish that with a small investment in Gibberellic acid, a beekeeper could double or triple his honey crop by spraying a field of honey plants or an orchard with a combination of Gibberellin and water.

The Automatic Bee Feeder

WHEN THE automobile first appeared, it had not yet been named and it was called the horseless carriage. When the food chamber hive was first used in the early 20's it was called by George S. Demuth, former editor of Gleanings, the automatic feeder. Mr. Demuth was one of the first to use and recommend it and it was later named the food chamber hive.

Mr. Demuth in one of his articles appearing in the April 1921 Gleanings writes as follows: "During the month of May in many of the northern states and during April, or earlier farther south, most of the brood which is destined to make the 'harvest hands', is being reared. Whether the food used in rearing them is being brought in from the fields or is being supplied by the beekeeper through feeders, or is stored in the hive, the amount must be sufficient if the colony is to attain full strength in time. One of the easiest ways to insure this is to give each colony a second story of combs two-thirds filled with honey. This second story becomes an automatic feeder, feeding the bees only as food is needed; and, in many localities at least, such a feeder, in addition to being automatic in its action after being filled the first time, is usually refilled each season without cost because of the better condition of the colonies thus abundantly supplied with stores".

During recent years the majority of beekeepers have adopted the food chamber, which, properly used, helps to insure maximum crops of honey.

Dr. C. L. Farrar in his article entitled "An Interpretation of the Problem of Wintering the Honeybee Co'ony", appearing in September 1943 Gleanings has this to say: "Honey converted into bees will bring a higher price than honey sold on the market because those bees contribute to a much larger yield".

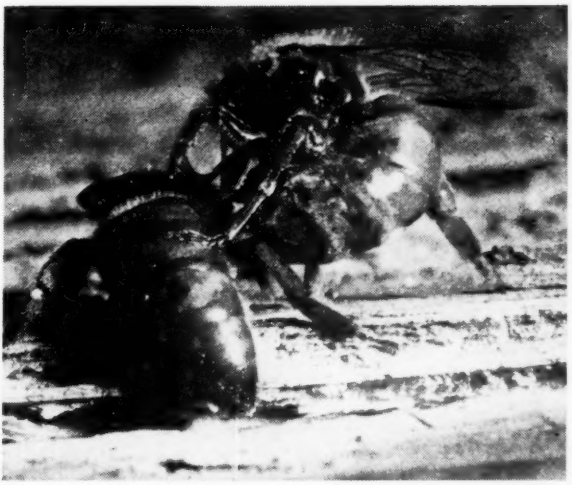
XUM

NEWS

Carl Cottingham of Niles, California, a teenager removes a bee-laden frame of honey from one of 37 bee hives which he maintains as an after school and summer hobby.—Art Vargas Photo, Castro Valley, California.

BEAUTY AND THE BEES: Little Robbye Kay Davenport, daughter of Pete Davenport, president of the Montgomery County Beekeepers' Association, (Clarksville, Tenn.) gets a close view of what 12,000 bees look like. The bees, a three pound package, were part of 17 packages received to be distributed to members of the association. (Photo by Doug Norman)—From the Clarksville Leaf Chronicle, Apr. 6, '57.

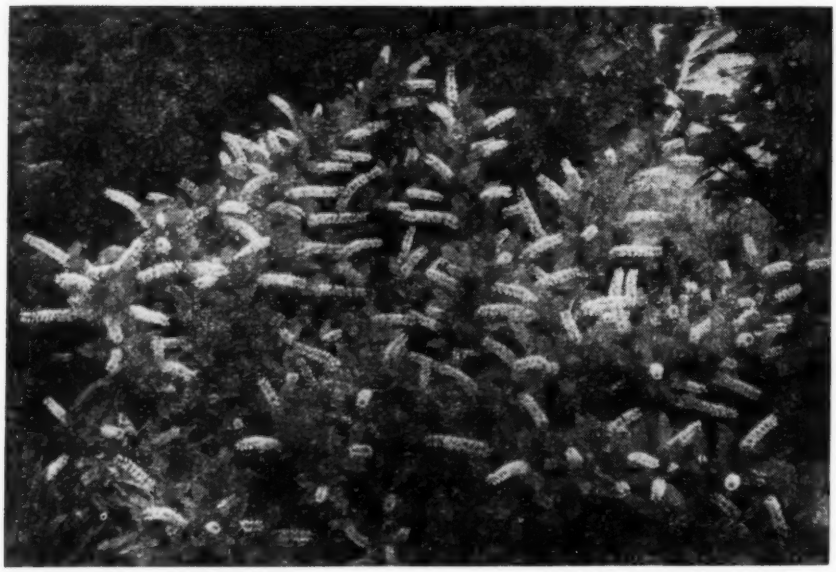
REEL



REGAL BATTLE — Two queen bees engage in mortal combat and nature dictates that only one will survive to rule the hive. In this scene from Walt Disney's "Secrets of Life," one queen bee gets the upper hand and sets her stinger in position to finish her opponent. This most amazing and miraculous True-Life Adventure Feature brings to light the exciting story of nature's secret world. — Authenticated News, New York City.

Bees that swarm on low branches of trees are easily captured and transferred to a hive. Here bees just shaken from a branch by Dr. Otto Mackensen, apiculturist of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, enter a hive made ready for them at the Bureau's Bee Culture Station, Baton Rouge, La. The cloth on the ground in front of the hive facilitates the bees' entry into their new home.—Photo by Forsythe, U.S.D.A. photo.

XUM



Virginia willow (Itea virginica)
—Photo by W. A. Stephen.

Let's Talk about Honey Plants

HARVEY B. LOVELL, University of Louisville, Louisville, Ky.

Ladino Clover. There have been conflicting reports on the importance of this large headed white clover. At the Columbus meeting of the A.B.F. Mr. Albert Thomas of Indianapolis told me that when he moved his bees to a field of Ladino clover when it was first planted, his bees ignored it. After it had been growing for three years, his bees began to work it regularly after most competing blooms were past. The honey has a light pink color and the comb had a pink tinge. The flavor of course, was very good. I suggested that it took that long to build up the proper bacteria in the soil for proper root nodule development. Many legumes do poorly when planted for the first time in a particular area because of the failure to innoculate the seeds or the soil with the proper strain of bacteria.

Virginia willow (Itea virginica). W. A. Stephen, Extension beekeeper, from Raleigh, North Carolina, sent me two photographs of this interesting shrub which belongs to the Saxifrage family, but like so many bushes and trees with slender leaves is often called willow. A better name is Washington's plume which is used in Florida. He adds, "If this plant were present in quantity, I am sure that it would be of value to bees. With its centrifugal inflorescence, it could bloom over a long period of time, and when I observed it, the bees were certainly working it." I found it in bloom in southern Louisiana in April two years ago, its white flower clusters presenting a most attractive sight, as bees worked the flowers for nectar. It does not seem to have been mentioned in any book on honey plants.

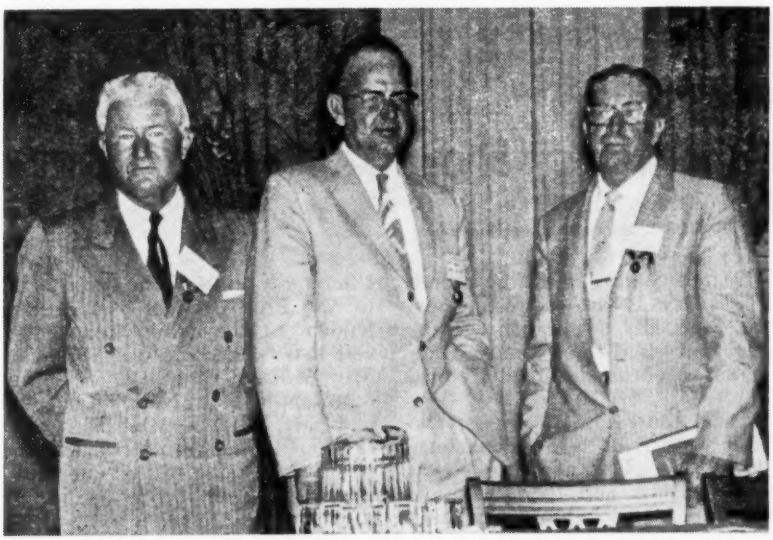
Louisiana. Steven Rabalais of Plaucheville, sent me three specimens from his state which his bees had been visiting last fall. The first one was **Baccharis,** a widely distributed honey plant in the extreme southern United States. I once received a sample of **Baccharis** honey from the Hatch brothers of Marathon, Texas, which was light amber and rather strong. **Bac-**

charis is sometimes called false willow because of its willowlike leaves. It is a low woody plant growing along the seacoast and in wet places farther inland. A common species along the east coast from Florida and the Gulf Coast north to Massachusettes is known as groundsel-tree and silverling (**B. halimifolia**). It is reported to be a valuable fall honey plant in several areas.

Spilanthes americana. The second specimen was **Spilanthes,** a low creeping herb with yellow rays surrounding a high dark cone-shaped center (very similar to blackeyed Susan or cone flower). E. Oertel from Baton Rouge writes "probably of little value to the beekeeper."

Boneset (**Eupatorium**). The third specimen was a boneset, which according to Oertel "provides considerable amounts of pollen and undetermined amounts of nectar in the fall" in Louisiana. I have discussed boneset several times recently in this column. I wish to thank Dr. C. A. Brown, Botany Department, L.S.U. for checking the identification of these three plants.

Bees and orchardists. Mr. A. C. Ullrich sends me two color photographs of an exhibit he has prepared featuring the relationship between bees and apples. The scene is a mosaic tile table top showing an apple tree in bloom, close-up of apple blossoms, beehives, and apples all beautifully worked into the tile pattern. He writes: "It is the first of a series I hope to do for the various industries using bees as pollinating agents." He adds that he hopes they will be used in reception rooms and copies of them may be embossed on napkins and stationery. He took seven months to complete the first one, partly because he had to wait for the apple, a winter variety, to mature.



American Beekeeping Federation Officers for 1958

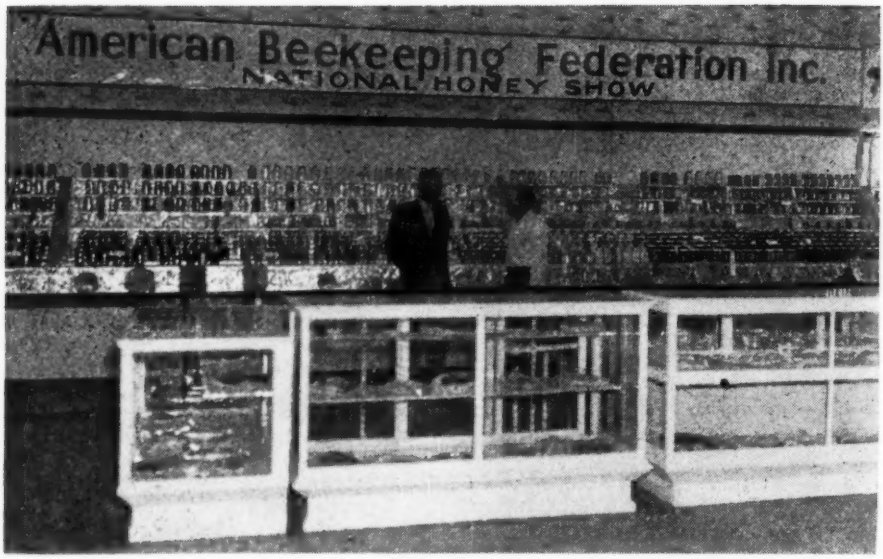
LEFT TO RIGHT: S. J. Watkins, 202 Red Mesa Heights, Grand Junction, Colorado, President. Mr. Watkins is a commercial beekeeper who specializes in comb honey production.

Robert Banker, Cannon Falls, Minnesota, is Secretary-Treasurer and a successful commercial beekeeper.

Lawrence R. Budge, 253 W. 7th, North, Malad, Idaho, Vice President, is a successful commercial beekeeper.

Our Federation is fortunate to have such efficient officers.

XUM



A view of the National Honey Show at the State Fair, Tampa, Florida, February 4-8, 1958. The dark honey was displayed at the left; the golden-colored honey on the right, and the beautiful light-colored honey formed a focal point in the center of the 60 foot wide exhibit. There were 120 entries from 60 exhibitors representing 16 states. Shown with the exhibit are Mr. Fred Oren, right, of Tampa and left, Mr. Millard Coggshall of Minneola, Florida.

We Visit the National Honey Show

HENRY J. RAHMLOW, St. Petersburg, Florida

A VISIT to a State Fair in the month of February is an interesting experience, especially if one can see the National Honey Show and a most beautiful exhibit of citrus and other tropical fruits.

We visited the Florida Fair just two days after we arrived at St. Petersburg from Wisconsin. Our new house was not quite finished and there was lots of work to be done, but we just could not miss seeing this State Fair in midwinter.

After passing through a long building filled on both sides with county booth exhibits of citrus and other tropical fruits, then another of plants and flowers, we came to the honey exhibit —60 feet long and beautifully arranged. We knew it was the honey exhibit, too, because there were more people in front of it asking questions of the three committee members than in front of any exhibit we saw. We had to wait to talk to Mr. Fred Oren of Tampa, Superintendent of the exhibit for eight years and two beekeepers on the committee: Mr. Millard Coggshall of Minneola, representing the National Federation, and Mr. Floyd Markham of Belle Glade, Florida, who showed us the National third prize exhibit of comb honey shown by Floyd Markham of Michigan.

Mr. Oren said that the State Fair had given $650.00 for premiums for the National and that they had a budget of $1,000.00 additional for their state show. There were 60 exhibitors with 120 entries from 16 states in the National show. Mr. Coggshall, who is the past president of the Florida Beekeepers' Association, said he was surprised at the size of the exhibit and the distances represented. He and Mr. Oren said they hope many more bee-

A Z LIBRARY

keepers will send exhibits next year when the National Federation meeting will be held in Tampa at the time of the State Fair in February.

We were impressed with the ten beautiful silver trophies given by various individuals and firms for winning exhibits. The committee had achieved unity, color harmony, and excellent design in the arrangement of the various classes and deserves the appreciation of the honey industry. The dark honey was grouped at the left of the 60 foot wide space of shelves; the light honey in the center and the golden honey to the right. The jars of beautiful light-colored honey and also the comb honey grouped in the center gave the exhibit a "focal point" and the quantity shown made it very impressive. The color of the honey ran from O or water white through the entire range of the Pfund grader. Mr. Oren showed us several entries of the "lightest" or water white honey which did not receive a prize because it lacked flavor or "character".

Honey from 30 Nations

An impressive exhibit which was continued for the two weeks of the Fair was made by Mr. C. Wade of Tampa, consisting of honey from 30 nations of the world. There was a large map of all the nations with threads from the honey to the country of origin.

There was honey made at midnight or during the "midnight sun" in Norway. Water white locust honey from Italy, almost black "coffee honey" from Guatamala, honey in beer and whiskey bottles from Brazil, because as the lady shipper said, they didn't have any other kind of glass containers.

If the fairs are to continue to be educational and deserve taxpayer's support, then the Bee and Honey exhibits surely qualify, because they equalled any and exceeded many.

We were told by Mr. Oren, Superintendent of the Show, that the list of premium winners will be sent to Gleanings soon, so we will not mention them.

Having just retired we can already say that if you come to Florida you will have no time to sit in a rocking chair and wonder what to do. There are so many things to do here, there just isn't time to do them all.

Price Support for Honey to Average 9.6c a Pound for 1958 Season

THE U. S. Department of Agriculture announced today that honey will be supported during the 1958 marketing season, which starts April 1, at a national average price of 9.6 cents a pound. This is 70 per cent of the February 1958 parity price (announced January 31) adjusted to the 60-pound container level. For the 1957 crop of honey the national average support level was 9.7 cents per pound, equal to 70 per cent of parity.

Price support for honey within a range of 60 to 90 per cent of parity is mandatory under the Agricultural Act of 1949, as amended.

The program for 1958 crop honey is substantially the same as the one in effect last year. It provides for farm-storage loans and purchase agreements on U.S. Grade C or better extracted honey which is stored in 60 pound or larger containers in approved storage and is not objectionable in flavor. Beekeepers or cooperative associations of beekeepers can apply for loans or purchase agreements directly to the Agricultural Stabilization and Conservation (ASC) county offices.

In announcing the honey price support program, the Department again urged beekeepers to increase efforts toward utilizing bees in pollination of important pasture, seed, vegetable, and fruit crops on remunerative basis. The honey price support program authorized in the Agricultural Act of 1949 is intended to extend interim financial assistance to beekeepers, thus providing them an opportunity to market their production of honey in an orderly manner. The Department also emphasized the importance of continued and intensified activity in improving the marketing and distribution of honey by all elements in the industry.

Detailed information regarding the program, including support prices by classes of honey and areas of production, will be available at ASC county offices in the near future.—U.S. Dept. of Agri., Washington, Feb. 21, 1958.

XUM

Asked & Answered

Wintering a Queenless Colony

Q. Will a colony that was queenless in the fall live until spring, provided it has enough honey?

A. Other conditions being equal, a queenless colony should survive the winter provided it was not queenless during the fall brood rearing period, thus resulting in the colony's being made up largely of old bees in the fall. Under such conditions the bees will die of old age during the winter. On the other hand, if the colony becomes queenless at the close of the fall brood rearing period there is no reason why it should not live until spring if other conditions are favorable. However, it will be necessary to supply it with a queen early in the spring if it is to survive during the spring.

Painting Hives with Bees in Them

Q. Is it possible to paint hives containing bees?

A. It is possible to paint hives with bees in them, when the weather is warm enough for paint to dry. If the bees are flying heavily it is well to leave off painting the fronts and alighting boards of hives until late in the evening after the bees have come in from the fields.

Queen's Wreath as a Honey Plant

Q. Do bees gather much honey from Queen's Wreath?

A. Mr. Deyell of Gleanings has forwarded your letter to me about the importance of queen's wreath (**Antigonum leptopus**). This vine has so many common names that I did not recognize it by the name of queen's wreath. It is called coral vine or pink vine in Florida where it is quite often planted. Bees certainly roar over the flowers with an eagerness seldom shown for any other flower. There has been some controversy over the color of its honey, especially as Pellett said the honey is white. However, A. V. Dowling, formerly inspector in Southern Georgia, told me that it produces a black honey which ruins other honeys and he has to keep his apiaries as far away from towns (where the vine is grown for ornament) as possible.

Mr. Foster, Florida inspector, told me that there was a beekeeper who had an old barn fall down and it was completely overgrown with **Antigonum.** The beekeeper placed a screening or netting over the barn and the flowers and then placed a hive of bees under it and they made several pounds of strong black honey resembling that from buckwheat. This is not surprising as coral vine or queen's wreath belongs to the buckwheat family. — Harvey Lovell.

Mouse in Hive During Winter

Q. Will a mouse damage combs?

A. The bees are not likely to hurt the mouse during the coldest part of winter but when the weather turns warmer and the bees begin to circulate over the combs, they will likely sting the mouse to death. We once saw a mouse entering a hive and in less than two minutes he came out of the hive with eight stings and died shortly after. The mouse in your hive may do some damage to the combs, until he is killed by the bees or chased outside.

Room Needed for Brood-Rearing

Q. Is a 10-frame standard brood chamber large enough to keep the queens busy if congestion is avoided?

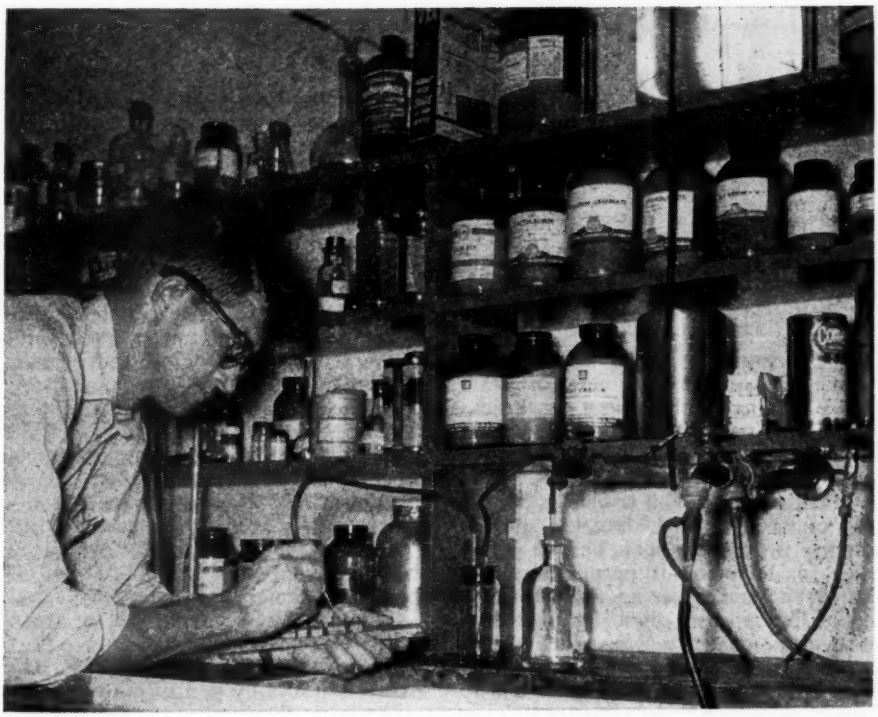
A. Very few queens will fill completely the combs in a standard ten-frame hive. However, since combs are seldom completely filled with brood and usually contain considerable honey and pollen, it is safer to let the queen have the run of two stories during the early part of the season when the colony would be inclined to swarm. At the beginning of the main honey flow the queen can be put down into the lower chamber and confined there by means of the excluder, where she will have plenty of room for the remainder of the season.

Examine Bees in the Spring

Q. How soon can I open up the hive in the spring to examine the colonies?

A. The hive can be opened and the bees examined on any warm day in the spring. In fact it does no particular harm to open the hives and look in from the top even during the winter, if this is done on a mild day. On the other hand, it is not advisable to handle the bees any more than is necessary until they begin to work freely. Usually it is not necessary to open the hives until late in April or early in May, provided the colonies have an ample supply of honey.

XUM



What's in Royal Jelly?

A. B. KENNERLY
College Station, Texas

WHAT IS there in royal jelly to produce a queen from a worker bee egg? Dr. Nevin Weaver of Texas A. & M. College is seeking to find out. To assist him in extracting royal jelly from the queen cells for study, he has devised special equipment for the purpose.

In the above picture, the water driven air pump is attached to a faucet. Water flowing through the pump creates a vacuum which draws the royal jelly from the cells and drops it into the first jar. The jar next in line toward the faucet catches any water that might bypass into the line.

"One of the things we've learned about royal jelly in our research so far," says Dr. Weaver, "is that the major constituents of royal jelly are not outstandingly different from those of some other foods. Its protein is much the same as egg protein or milk protein in amino acid content."

Of interest is a fatty acid in the substance that is a strong bacteriacide and fungicide. This has created some speculation as to any resistance that queen larvae may have against disease.

XUM

Income Tax Return on Bees

AYLMER J. JONES, Malden, Mass.

RECENTLY IN reading over the instructions for filling out the Federal Income Tax Return No. 1040, I noticed that certain deductions are available to the individual for casualty losses, provided he uses the so-called long form and itemizes his deductions.

The Income Tax instructions clearly cover losses of bee hives with or without bees, by fire, theft, flood, lightning, accident, and storm. Even if one valued a complete hive as worth $25.00 only, there would be a savings of $5.00 in tax liability in the lowest tax bracket. A good new hive with many supers of honey might well be worth much more, of course.

Whether or not you could deduct for loss of bees through freezing and/or starving is problematical. There is some basis for believing it permissible. On the other hand, freezing and/or starving of live animals might be treated as in the same category as disease. At any rate, there ARE tax savings available for any owner of bee equipment who has lost it under certain circumstances. It is not necessary that it be his main business, merely that he itemize his deductions. The following is from the official instruction book:

"**Casualty Losses and Thefts.** — If you itemize deductions, you can deduct your net loss resulting from the destruction of your property in a fire, storm, automobile accident, shipwreck, or other losses caused by natural forces. You can also deduct in the year of discovery losses due to theft, but not losses due to mislaying or losing articles.

"The amount of loss to be deducted is measured by the fair market value of the property just before the casualty less its fair market value immediately after the casualty (but not more than the cost or other adjusted basis of the property), reduced by any insurance or compensation received.

"**You CAN Deduct Losses On:** —
Property destroyed or damaged by fire.
Property, including cash, which is stolen from you.
Loss or damage of property by flood, lightning, storm, explosion, or freezing.

"**You CANNOT Deduct Losses On:**
Accidental loss by you of cash or other personal property.
Property lost in storage or in transit.
Damage by rust or gradual erosion.
Animals or plants damaged or destroyed by disease."

A Preventive Measure

WILLIAM K. McKINLEY, Sacramento, California

A FEW months ago someone with a destructive impulse visited one of my out-apiaries. Considerable damage was done so I decided to erect this warning sign. Truthfully my apiary is just an ordinary out-yard with gentle hybrid Italian bees. The sign is to discourage vandalism and thievery.

Killions Win National Acclaim

PHOTO No. 1 shows Gene Killion receiving the Federation Sweepstakes Trophy from Fred Oren, Supt. of the American National Honey Show at Tampa, Florida. The two trophies in front of them are the first place awards for the Chunk Honey and Beeswax. There were six jars 2½-pound size, entered. One jar was presented to Florida's Governor Leroy Collins, one sent to the Diamond Match Company, one was presented to the Illinois Governor, William G. Stratton on March 6th, Everett M. Dirksen, Senator from Illinois is presenting one jar to President Eisenhower, one jar graced the tab!e in Golden Wedding Anniversary of Mr. and Mrs. Joseph H. Reising in Kolb's German Restaurant in New Orleans, and the last jar was sold to Mr. Mike Rendaci of Mike's Motor Company, Clinton, Indiana. Mr. Rendaci is one of Indiana's leading Dodge and Chrysler dealers. He paid Gene $250.00 for the 2½-pound jar or $100.00 per pound. He did this just to enable Gene, his wife, and son to travel to Tampa and receive the awards.

Photo No. 2 shows Mr. Rendaci giving Gene the check and receiving the

prize winning honey. Gene does not intend to enter again, to use his own words he said, "Three times a winner is enough for anyone".

The following is taken from a lengthy write-up appearing in the March 1, 1958, Paris Illinois Daily Beacon News:

The Killion story actually began 50 years ago when Carl E. Killion, Sr., was a young boy on an Indiana farm.

The expansion of his childhood dream has materialized into a well-recognized industry which has gained repeated honors and plaudits for him and his son.

Back in 1907 Mr. Killion, then a seven-year-old investigative lad, hid in the grass to watch an old beekeeper, Joe Pendergast, care for his bee colonies near Bridgeport, Indiana.

The actual Killion industry was started in 1916 when an o!der brother found a bee tree which was cut down and the bees removed for Mr. Killion's first hive of bees. He moved to Paris in 1922. Mr. Killion married the former Elizabeth Hayes, and Mrs. Killian is one of his able conscientious assistants today.

Mr. Killion through the years has insisted on maintaining a high standard of perfection in his comb honey production.

But it remained for his son, Eugene to complete the cycle of awards and recognition by winning three times the highest award of the nation, the sweepstakes trophy of the American National Honey show. No one else has won the award twice.

XUM

I Convert a Doubtful Friend

by E. D. FOX, Washington, D. C.

WHEN THE deep freeze had come and gone and the thaws had arrived, the change brought an unusually warm day which fired me with ambition. It was a good feeling to see a big washing swinging brightly on the line in the sunshine once again instead of drying in the dreary basement. The sun felt good to me and my winter-weary bones seemed to thaw also.

It wasn't until much later that I recalled white linens and bees suddenly released from long confinement, just did not mix. It was too late then and white sheets, etc. had to be washed again. 'Twas my own fault and that is where I placed the blame.

The one consolation was the fact that it was my own laundry and not the neighbors. Luckily there were no other washings on any nearby lines. Good thing, too, for our honey supply was far too low to soothe any disgruntled housewives with gifts.

We are big honey eaters and our supply goes fast. In our house it takes quite a lot of honey to do the job of cooking up honey recipes, making cough remedies and just plain spooning honey on bread, pancakes, and waffles, not to mention our favorite, serving honey on hot buttered biscuits. Yummy.

All the friends and relatives who come to our house enjoy sharing the good taste of honey with us with the exception of one good friend. She is a lady we had lost track of until recently when she turned up again and began to visit once more.

For some strange reason this lady had the odd idea honey was not clean and was full of germs. We discussed the notion and she could not explain the aversion to eating honey. There was nothing to recall in the past to cause the belief.

To make matters worse the doctor had advised honey in her young son's diet for special treatments he was receiving. The mother still refused to use the honey.

In order to help my friend I suggested she come out during the summer and watch while my husband and I extracted honey. She readily consented.

When the lady saw our busy water kettle on the hot plate in action she was interested and surprised. All utensils, jars, and the equipment in our honey room were scalded with boiling water. Straining cloths, aluminum screening, etc., received the boiling water treatment also. We are proud of our fine clean product. Honey is as food and should certainly be handled the same way one would prepare food in the kitchen.

To further convince my friend, I gave her our beekeeping encyclopedia to read and particularly advised the section, "Honey As an Antiseptic". This really did the trick for she took a jar of our honey home with her and later came back for more.

The son received his honey and benefitted by it and what's more the mother was converted and is now a honey eater herself.

It's an Idea

M. H. STRICKER, Annandale, N. J.

TROUBLED with mice chewing your entrance stops? Take a piece of tin one-half inch wide and tack along the entrance size you use. This keeps mice from enlarging the entrance.

How Much Do We Know about Bees?

D. A. PURVES, Bear River, Nova Scotia

A REPORT CONCERNING the work of the Federal Department of Agriculture, Ottawa, Ontario under date of June 27, 1957 reads in part as follows:

Federal scientists are using a geiger counter and radioactive material to see what's buzzing with the queen bee.

Staff of the agriculture department's bee division, under Dr. Cecil A. Jamieson, are conducting the experiments in a cabin behind their Ottawa station. Dr. Jamieson was born on a farm near Barrie, Ontario, and graduated from the Ontario Agriculture College, Macdonald College and Cornell University. He has been with the bee division since 1938. and director since 1949. The station has 250 colonies.

The thorax of the queen bee is dabbed with some radioactive material. The "nozzle" of the geiger counter, placed at the entrance to a bee colony in the cabin, keeps track of her movements, transmitting them to a recorder.

So far, the Federal beekeepers have been able to shatter the theory that a queen bee mates only once. "They mate an average of seven times," said Dr. Jamieson.

Scientists at the experimental farm station here and at other Federal farms across the country are studying the problems of pollination and disease as well as the habits of the bee. Reseach is also being done on a tougher type of bee for colder climates.

To the amateur beekeeper, this report that a queen mates on an average of seven times, is surprising and to the professional beekeeper of long standing, the report must be simply astounding. To any enquiring mind, this raises many questions and disposes of many previous theories based on the assumption that the queen mates only once.

One of the pressing problems facing the package bee industry in the South is the matter of queen supersedure after packages are established in hives. Could it be that some queens fail because of partial insemination?

The problem of controlling swarming which is one of the most deeply rooted instincts of the honeybee, is also one of the most pressing problems facing the amateur and professional beekeeper alike. Could it not be that we have been approaching the problem from the wrong angle? It has been established that failing queens are one of the causes of swarming.

These are only a few of the many problems that remain to be solved. Our present knowledge of the honeybee is only a scratch on the surface of what remains to be discovered.

Entomologists tell us that bees were here on earth many millions of years before monkey or man had evolved. Man can explore the structure of the atom and still it would appear we are only now discovering one of the basic habits of the queen honeybee.

Very possibly the next few years will see many new theories and practices arise as a result of the research work now being done by our Agricultural Departments in the United States and Canada and in other countries.

FLETCHER THE 4-H'R
HORROR COMICS
BEES FOR PROFIT AND PLEASURE
"I'D SUGGEST YOU SELECT BETTER READING MATERIAL FOR YOUR SPARE TIME!"

XUM

A Talk to Beekeepers

M. J. Deyell

COMBLESS PACKAGE BEES
What are they?
How should they be hived and managed?
When should they be received?

Jack Deyell

SOME YEARS AGO while attending a beekeepers' meeting I heard a talk on package bees. At the close of the talk the meeting was thrown open for questions and one young man who had listened attentively asked, in all seriousness, "Just what is the difference between a package bee and a regular honeybee?" The speaker tried not to smile and proceeded to answer the question as best he could.

This goes to show that speakers should make reasonably sure that the audience is familiar with the terminology used.

Since this talk will be read by inexperienced as well as experienced beekeepers I should like to keep it down to the level of the person who has not yet seen a package of bees but perhaps will see one before the season is over.

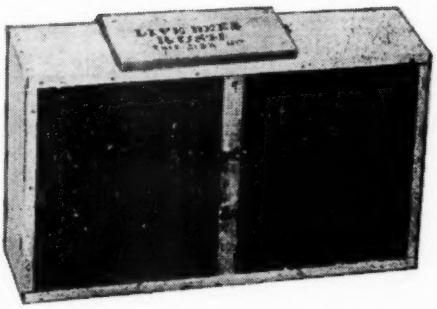
For the lack of a better definition, let us say that package bees are bees that are shaken from colonies into combless cages made of wirecloth and wood, of convenient shape and size for shipping and handling. Each package is somewhat comparable to a moderate sized swarm. Packages vary in size from two to five pounds of bees. The two and three pound sizes are most common. Unless otherwise specified, a queen bee confined within a small introducing cage accompanies each package. Each shipping cage has a friction-top can containing sugar syrup. Two or three small holes are punched in the cover of the can which is turned upside down and held securely inside the shipping cage. The bees get the syrup through the small holes in the cover of the can.

The late A. I. Root was one of the pioneers in shipping bees in packages, having started in 1878, 70 years ago. Bees were then shipped by express in one-quarter pound, one-half pound, one pound, and one and one-half pound packages. Shipping cages then used were quite similar to many of the cages now used. Specially prepared candy instead of sugar syrup was used for food in the shipping cages.

Many difficulties in shipping were experienced between 1880 and 1920. During the past 35 years the business has gone ahead by leaps and bounds until at present approximately one million pounds of bees and a similar number of queens are shipped from the South to the North annually.

Why Ship from South to North?

Wide areas throughout the southern states are well adapted to the production of package bees and queens, because the season in the southern tier of states is approximately two months earlier than it is in the latitude of northern Ohio.



A three-pound package of bees with queen ready to be crated for shipment.

Package bees are used for strengthening weak colonies, for making increase or starting new colonies to produce surplus honey the same season, and for replacing dead colonies.

Packages for Strengthening Weak Colonies

I shall never forget the spring of 1920 when after removing bees from our bee cellar we found 150 weak colonies, each having a handful of bees and a queen. These colonies had been drawn on too heavily for filling orders the previous season. To save these weak colonies something had to be done and done quickly. We ordered 150, two pound queenless packages from the South. They arrived about the middle of April, none too soon to save the weak colonies.

To unite these queenless packages with weak colonies, we caged the queen in each colony. Five combs were removed from each hive to make room for the cage of bees. We caged the queen in each weak colony then set the cage of queenless bees in the empty space beside the five combs. The weak colonies thus strengthened with packages developed rapidly into normal colonies ready for the honey flow which came on seven or eight weeks later.

Packages for Establishing New Colonies

Hives should be assembled, then placed on their stands in readiness for hiving packages when received. Even though no drawn combs which are preferable are at hand, frames with full sheets of foundation may be used. Sugar syrup should be fed continuously until nectar is plentiful. The feeding causes the bees to draw out the comb foundation. It also stimulates the queen to her best efforts in egg laying.

When hives containing combs with some honey and pollen are used for package bees, it is unnecessary to feed so much sugar syrup. By all means use combs of honey for the packages if available.

Packages to Replace Winter Losses

Some winter loss seems inevitable even in well managed apiaries. As soon as dead colonies are discovered in the spring, the dead bees should be cleaned out of the hives and the entrances closed to keep out robber bees and mice until packages are put into them. The combs with their supply of pollen and honey (if the bees did not die from starvation) give package bees a good start. No beekeeper should allow perfectly good hives and equipment to stand idle when package bees are available and when such good results can be secured from them the same season.

Watch for Diseased Combs

If American foulbrood is prevalent in the vicinity, the combs from hives in which colonies died should be examined carefully for indications of disease. It would, of course, be folly to install package bees on diseased combs.

If the cells in the middle combs are found to be free from dead or decayed brood or dried-down remains of larvae or pupae (scales) they are probably free from disease. If, however, the remains of dead larvae lie lengthwise on the lower sides of the cells and are found dried into hard scales that adhere tightly to the cell walls, this sympton indicates American foulbrood. If in doubt, a sample of the brood should be sent to the Bureau of Entomology and Plant Quarantine, Beltsville, Maryland, for examination. For this purpose a piece of comb four or five inches square containing a number of dead

XUM

The bees can be shaken out through the feeder can opening or through the side by removing one of the screens.

larvae or pupae should be sent in a wooden box. The combs in the diseased hive should be promptly burned in a deep pit and ashes well covered. The hive should be scorched out by painting the inside of the hive with gasoline and throwing a match into it and scorching the interior to a light brown color in order to make the hive safe for future use.

When to Hive Packages

There is no advantage in getting packages too early in the spring. April 15th for the latitude of northern Ohio and May 1st for localities further north are about right as the seasons average. It takes eight or ten weeks for packages to build up into full strength colonies ready for the main honey flow.

The critical time in the development of a package of bees is during the first three weeks. It takes three weeks from the time a queen begins to lay until young bees emerge. It takes two weeks more for these young bees to reach the honey-gathering age, making five weeks before there are young bees of the honey-gathering age resulting from the first eggs the queen lays. When young bees begin to emerge, package colonies will forge ahead, provided the weather and conditions for obtaining nectar and pollen are favorable.

The Most Profitable Size of Packages

In the northwest where the honey flow comes rather late and is long drawn out as in the sweet clover areas, two-pound packages give good results. In the white clover and alsike regions the three-pound packages seem to be preferable, because it is necessary to have colonies up to the peak of strength at the time the main honey flow starts. Frequently, a honey flow from alsike and white clover does not last over two or three weeks.

Importance of Good Queens

It is extremely important to have a good queen with each package since it is chiefly the bees from her eggs and not those that come in the package that gather the honey crop. Comparatively few bees sent in the package help to store the crop of surplus honey.

The cage containing the queen and a few attendant bees is suspended within the cluster of bees. Some shippers send queens in dry cages, that is, queen cages without any candy or attendant bees. The bees in the package feed the queen in her cage enroute.

Some Points to Remember

Be sure to order package bees reasonably early in the season and specify, if possible, the date on which shipment is desired so that the shipper may make his plans to suit your convenience. Have your express agent call you as soon as the bees arrive. At present, quite a number of package bees are shipped by parcel post.

Suggestions for Hiving Package Bees

1. If the weather is hot when the bees arrive, place packages in a cool, dark room. If the weather is cold, place packages in a room not warmer than 70 degrees F. until ready to put in the hives.

2. Feed the bees sugar syrup before hiving. Make sugar syrup by diluting one part of hot water with one part of sugar until the crystals are dissolved, then smear a liberal amount of warm syrup on the wire screen of each cage laid on its side. A metal container may

be placed underneath the shipping cage to catch any syrup that drips from the cage. A brush or cloth may be used to spread the syrup onto the wire screen of the cage. Continue feeding until the bees are gorged. This will make them quiet to handle.

3. Install bees late in the evening, if possible, to avoid having them drift from one hive to another. It is an advantage to have the hives six or eight feet apart to help prevent drifting. When bees are installed late in the evening, they will get settled down in their hives during the night.

4. There are different methods of putting package bees into hives. An experienced beekeeper who has combs of honey and empty drawn combs to put into hives may shake the bees from each package into the side of each hive after a few frames are removed temporarily. It seems to be an advantage to leave each queen in her cage until the bees get settled down. When there is some candy in the end of each cage, the bees will eat the candy out of the hole in the end of the cage and the queen will be liberated.

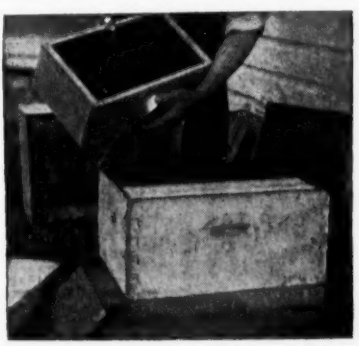
I recall installing some packages a few years ago in hives containing combs of honey. The weather was rather cool. The bees had been fed sugar syrup so I shook the bees from each package in the hives and liberated the queens. The bees went directly onto the combs of honey. When I checked the bees 24 hours later I found at least one queen had started to lay eggs.

For beginners who have never installed packages and who have hives containing frames with full sheets of foundation, I would recommend removing four or five frames from each hive temporarily to make space for each package of bees. Remove the cover board of each bee shipping cage. To remove the feeder can, tilt the bottom of the cage up a bit to let the can slide out far enough to grasp the bottom of the can. Before lifting the can out, place the cage of bees in empty space of the hive, close up to the frames. Then remove the feeder can and queen cage. Remove the cork or perforated metal covering the candy in the end of the cage. Then hang the queen cage, candy end up, between the top bars of the middle frames in the hive. The bees will move out of the shipping cage, onto the combs with the queen. If the weather is cold, shake a few bees onto the queen, to keep her warm.

Feed Liberally

If the combs of honey are not available, feed warm sugar syrup by mixing equal parts sugar and warm water. A division board type of feeder which fits into the hive in place of a frame puts the syrup where the bees can get to it easily. A five or ten pound friction-top pail may also be used as a feeder. Punch about a dozen holes in the lid of the pail with a 2d nail. Place the inner cover, with center block removed, on the hive. The feeder can filled with warm syrup with perforated cover put on securely is placed over the hole in the inner cover with the cover of the pail facing down so that the bees can get the syrup through the holes in the cover. Put an empty super or a tight-fitting box (if cover is not available) over the feeder can to protect it from rain or robber bees, then the outer cover is put on top.

Continue feeding until nectar is plentiful. As soon as the queen is found to be laying, remove the bee shipping cage and fill in the empty space with combs that were removed temporarily.



Remove the wooden cap, turn the cage upside down so that the feeder can will slip part way out and remove the feeder can.

XUM

Just News

Express Rate on Bees — Efforts on the part of bee breeders and the American Beekeeping Federation to have the express rate on bees reduced to first class from one and one-half times first class has been turned down by the Railway Express Agency. The reasons given are that bees require special attention and handling at the terminal and in transit and this necessitates the higher rate.

The **Midwestern Beekeepers' Association** will meet at the I.O.O.F. Hall, 812 Westport Road, Kansas City, Missouri, at 2:30 P.M., Sunday, April 13th. Among the subjects to be discussed will be the instaliation of package bees, dividing of colonies, and stimulative feeding. A film to be shown after the meeting. Refreshments served by the Ladies' Auxiliary. Everyone welcome. —C. L. Barrett, Secretary.

The spring meeting of the **Southeast Minnesota Beekeepers' Association** will be held in Zumbrota, Minnesota, on Saturday evening April 5. State Apiarist, C. D. Floyd, and Dr. Thomas Gochnauer will speak on the latest developments in disease control, honey grading under the new Minnesota grading law, and other instructive topics. Each member is asked to bring a sample of his honey for a grading demonstration.

Federation Secretary, Robert Banker, will give a report of the last national meeting. Leo Kieffer will speak on beekeeping practices of his area. Miss Bright will mix and bake a cake during the meeting and give a demonstration on how to make a prize-winning cake with honey being used as the sweetening. Beekeepers from every corner are invited to come.—F. Q. Bunch, Sec.

The **Annual Beekeeping Short Course** at the Pennsylvania State University will be given this summer from August 18 to 22 inclusive. Mark this date on your calendar. Beekeepers from any state are welcome. For details regarding program and cost, write to D. R. McClay, Director Short Courses, Armsby Hall, University Park, Pa.—Edwin J. Anderson.

April 12th will be a big day for **Arkansas Beekeepers** when members of the **Arkansas Honey Producers' and Packers' Association** with the **South Arkansas Beekeepers'** and the **Northeast Arkansas Beekeepers' Associations** cooperating combine in a joint FIELD DEMONSTRATION and FELLOWSHIP DAY on the picnic grounds of the Arkansas State College at Jonesboro, Arkansas at 10 A.M. The day will be taken up with demonstrations of several methods of hive manipulation, such as preparing queen cells for grafting and drawing cells, transferring bees from box hives to standard equipment and exhibiting unusual equipment and odd gadgets, also games and fun. Supply houses are invited to provide exhibits and advertising materials in any manner they desire. Officials are giving their best to making this a good and worthwhile day.—Ray L. Mc Lester, Sec.

The **Westchester County Beekeepers' Association** will hold their next meeting at the Odd Fellows Hall, 20 Lockwood Ave., New Rochelle, N. Y., on Sunday, April 20th at 2:30 P.M. Topic of discussion will be "Swarm Controlling" and "Toxic Sprays". Expert beekeepers will be on hand to discuss bee problems. Refreshments will be served at the close of the meeting.—Mrs. Alfred Roth, Pub.

The **Connecticut Beekeepers' Association** will hold its annual meeting on April 26, at the Y.M.C.A., corner of Pearl and Jewel Sts., Hartford, Conn. Lunch will be served in the cafeteria. Election of officers and other business will come before the meeting. Our speaker will be Dean W. B. Young, Dean and Director of College of Agriculture, University of Conn. Two friends from Hungary are to tell of beekeeping and the production of royal jelly in their native Hungary. Beekeepers and friends are invited.—Philemon J. Hewitt, Jr., Chairman of Pub.

The **Montgomery County Beekeepers' Association** will hold its spring meeting at the Presbyterian Church in

Flourtown, Pa., Route 309, April 26, at 8 P.M. sharp. Our speaker will be Paul Holcombe; slides, and an open discussion.—Mrs. A. C. Storm, Sec.

The **17th International Beekeeping Congress** will be held in Bologna and Rome, September 15 to 23, 1958. The preliminary scientific meeting will be held in Bologna from 15 to 17 of September. The Congress will take place in Rome from 18 to 23 of September. Further details will appear later.

From "Bee-Wise" for February '58, issued by British Columbia Dept. of Agriculture, Vernon, B. C., we note that beekeeping in that province will celebrate its 100 anniversary this year. W. H. Turnbull formerly Provincial Apiarist has recently written a book, "100 years of Beekeeping in British Columbia". For further information concerning this book write John Corner Apiary Office, Court House, Vernon, B. C. Mr. Corner is provincial apiarist.

Wallace Bradley of Bunches Creek, North Carolina, the master beekeeper of the Smokies, died January 23 at the age of 84. Surviving him are his wife, four sons, three daughters, 23 grand children and 21 great grand children. In 1898, Mr. Bradley started keeping bees with six bee gums which he carried through the wilderness on his back to the clearing he had made for his family. He built up to an apiary of 110 colonies and has produced delicious sourwood honey during the years. Our industry needs more beekeepers with the enthusiasm possessed by Wallace Bradley.

Honey Cookery Contest in Rhode Island A Big Success

W. K. DAVIS, President, Apicultural Society of Rhode Island

A FIRST ATTEMPT at a State-wide Honey Cookery Awards Program sponsored by the J. J. Newberry Company, Providence, R. I., and organized by members of the Apicultural Society of R. I. received overwhelming support from beekeepers and 4-H club members in R. I. and North Dighton, Mass. Judges for the contest were Miss Violet Higbee, Head, Home Demonstration Agents, University of R. I., Mrs. Ella Simas, Metropolitan Providence Home Demonstration Agent, Miss Gertrude A. Cooke, VA Hospital Dietitian, Providence, and Mr. Ralph Platt, Chief, Bakery Department of the sponsor store. Participants in the contest ranged in ages from 10 to 60 and there were 63 entries in the three divisions — Cakes, Cookies, and Candy.

Contestants made their own choice as to the product to be prepared but the minimum requirement was that the contestant use at least one-fourth cup of honey as a sweetening source. After the judges finished their tremendous task of deciding the winners the general public who witnessed the program in the Ballroom of the Cranston Street Armory as part of the R. I. Farm and Home Show Program were invited to sample the various baked products. This created a flurry of sales for both honey and the **Old Favorite Honey Recipe Book** and it was reported that over 267 cook books were sold during the four-day run of the show.

The Society was proud and pleased at the accomplishment of its own 17 year-old Recording Secretary John P. Card whose Honey Layer Cake with Uncooked Honey Frosting took first award in the Cake division. Awards were presented by management of the J. J. Newberry Co. and Mr. John Riley made the presentation.

The lucky winners were: Class "A" Cake: John P. Card (Beekeeper) 1st; Miss Karen Dexter (Northern 4-H) 2nd; Brian Donle (4-H Mass.) 3rd; Miss Mary Roderiques (Eastern 4-H) Honorable Mention. Class "B" Cookies: Miss Sadie Escobar (Eastern 4-H) 1st; Kenneth Horrocks (4-H Mass.) 2nd; Miss Judy Kelley (Eastern 4-H) 3rd; Miss Johnne Amadon, (Northern 4-H) Honorable Mention; Miss Louise A. Lauterbach (Eastern 4-H) Honorable Mention. Class "C" Candy: Mrs. Beatrice Twichell (Northern 4-H) 1st; Miss Johnne Amadon (Northern 4-H) 2nd; Miss Geraldine Goepfret (Northern 4-H) 3rd; Mrs. Bernedine Segar (Beekeeper) Honorable Mention; Miss Polly Jo Crawford (4-H Mass.) Honorable Mention.

XUM

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month, preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. THE HUBBARD APIARIES, ONSTED, MICHIGAN.

IOWA honey, one can or truck loads. RUSSELL D. SMALLEY, BEAVER, IOWA.

CLOVER extracted honey in sixties. ABRAM BRUBAKER, RT. 2, LANCASTER, PA.

MICHIGAN'S FINEST WHITE CLOVER HONEY. New sixties. Fully ripened. You'll be pleased. Sample 20c. JOHN McCOLL, TECUMSEH, MICH.

Large lots, quality honey, 60's and drums. NORTH CENTRAL HONEY PRODUCERS' LEAGUE, BOX 211, BELLEVILLE, WISCONSIN.

AM BOOKING orders new crop gallberry tupelo extracted and chunk comb. Will pack to your specifications. A. V. DOWLING, VALDOSTA, GEORGIA.

TUPELO, wild flower or buckwheat in 60's. Honey candy. EN-R-G FOODS INC., BOX 232, LANCASTER, PA.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. DEER CREEK HONEY FARMS, LONDON, OHIO.

CASH FOR BEESWAX. Write as to quantity and we will quote price. MEUNCH-KREUZER CANDLE CO., INC., SYRACUSE, N. Y.

WANTED—White extracted or comb honey. Send sample. MILLERSPORT HONEY CO., MILLERSPORT, OHIO.

BEESWAX WANTED—Highest prices paid in cash or trade for bee supplies. THE A. I. ROOT COMPANY, MEDINA, OHIO; COUNCIL BLUFFS, IOWA; SAN ANTONIO, TEXAS.

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. WALTER T. KELLEY CO., CLARKSON, KY.

WANTED — Light amber clover, fall flowers, buckwheat and white clover. Send sample and lowest price. CLOVERDALE HONEY CO., FREDONIA, N. Y.

WANTED—Honey in 60 pound cans, also beeswax, any quantity. L. E. ALLEN, TIPTON, MICH.

CASH for Amber and Buckwheat Honey. Best cash price for wax. HUBBARD, ONSTED, MICH.

WANTED—Buckwheat and light amber honey. EASTERN FOOD PRODUCTS, 421 BEDFORD AVE., BROOKLYN, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. STOLLER HONEY FARMS, LATTY, OHIO.

WANTED—All grades of extracted honey. Carloads or less. Send sample and price wanted to HONEYMOON PRODUCTS CO., 39 E. HENRY ST., RIVER ROUGE 18, MICH.

We render cappings, old combs and buy your beeswax. Shipping tags sent on request.—M. R. CARY CORP., 219 WASHINGTON SQUARE, SYRACUSE 8, N. Y.

HONEY WANTED all grades and colors, in tins or drums, granulated and liquid, highest prices paid, trailer loads. Send samples representing each lot. ALSO ROYAL JELLY. Write CHAS. E. FARRIS CO., 99 HUDSON STREET, N. Y. CITY. Established since 1910.

FOR SALE

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. THE HUBBARD APIARIES, Manufacturers of Beekeepers' Supplies and Comb Foundation, ONSTED, MICHIGAN.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

200 EMPTY bodies metal covers, bottom boards, queen excluders 10-frame size, used, but disease free, half price. LEWIS L. WINSHIP, SPRINGVILLE, N. Y.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. SOUTHWICK APIARIES, WABAN, MASS.

Makers of ROBINSON plain and WAVY-WIRED foundation. Also render and buy beeswax. Order direct from manufacturer and save dealer costs. Shipping tags free. WAX WORKERS, INC., ITHACA, N. Y.

BEEKEEPERS: Learn Weim-Way System of queen introduction immediate release of queen. Also how to unite up to six swarms in one hive by using common household product selling for $1.75; enough to introduce 25 queens, or unite 20 swarms. Small copyright booklet, $2.00. Return booklet after 60 days if not satisfied, for prompt refund. Developed by WILMER P. WEIMER, AVILLA, INDIANA. Over 40 years' experience with bees.

BEEKEEPING BUSINESS, bees, modern shop, 2000 supers, excellent locations. W. A. WALKER, PORT AUSTIN, MICHIGAN.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

CARNIOLAN and CAUCASIAN Bees for 1958. Booking queens. Each, $1.00; 2-pound bees with queen, $4.00. 3-pound bees with queen, $5.00. LEWIS & TILLERY BEE CO., RT. 3, BOX 251, GREENVILLE, ALABAMA.

FOR SALE—3 and 4-frame nuclei by the truck load, queenless packages and frames of brood and bees. WALKER APIARIES, PHARR, TEXAS.

THE NORMA ROY Apiary Italian bees, 3-pound with queen, $4.15; 4-pound with queen, $4.90. Book your order now. No down payment. Live delivery and a health certificate with shipment. NORMA E. ROY & SON, HESSMER, LA.

SEND OR BRING cages. Will supply bees for 70c pound. Can supply queens or new cages. Write for information. A. V. DOWLING, VALDOSTA, GA.

3-BAND ITALIAN and Carniolan bees. 3-pounds with queen, $4.90; 5-pounds, $6.80. Queens, $1.25. LUTHER PICKETT, EFLAND, N. C.

CARNIOLAN and CAUCASIAN queens, $1.00 each. ROY WADDELL, R. 3, WOODRUFF, S. C.

FOR SALE—200 colonies of bees, state inspected. ELMER SMITH, BENTON RIDGE, OHIO.

DARK ITALIAN BRED for heavy production—3-lb. package with queen, $4.50. Queens, $1.00. HENRY LOEHR, CALDWELL, TEXAS.

FOR SALE—50 hives of bees on location. All in two and three story hives with lots of stores, also 60 shallow extracting supers with drawn combs, also 20 new supers without frames. Cause of sale, old age. HARVEY HOUSEKEEPER, 14324 BURGESS, DETROIT 23, MICH.

FOR SALE—30 colonies bees packed. Equipment for comb honey. Extra supers. Two-frame extractor. WILLIAM O. DEAN, BOX 138, NASHVILLE, MICHIGAN.

TEN healthy colonies, supers, extractor, HENRY LEMBECK, R.R. 1, COFFEYVILLE, KANSAS,

HELP WANTED

WANTED—Two or more experienced bee men for season. Good wages and opportunity for right men. Give experience and references. Bees located in Arizona, Idaho, and North Dakota. POWERS APIARIES, PARMA, IDAHO.

BEE MAN—Experienced, single, sober. Commercial honey production. Season, April-December. Room and board furnished. Give qualifications. LAVERN DEPEW, AUBURN, N. Y.

WANTED

WANTED—Used 45 or 50 frame extractor. Also queen excluders. EUGENE McCLAIN, 12491 LACEY, HANFORD, CALIF.

WANTED—Steam boiler about 3 H.P. vertical. Also honey close by. KIMBALL APIARIES, GALESBURG, MICH.

WANTED—Financial backing for 1000 colony outfit by individual or company. I furnish years of experience, locations, dovetailing, framemaking machinery, and package bees. GILBERT ANDERSON, 715 24th, SEATTLE, WASHINGTON.

WANTED, by man alone, partner in business of honey production and retail selling. Good home market. BOX 137, GLEANINGS, MEDINA, OHIO.

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

Booking orders now. Over 30 years a shipper. Send for Free Circulars.
BLUE BONNET APIARIES
Weslaco, Texas

J. E. WING & SONS
45 Years Continuous Service
Italian Package Bees
and Queens
Our Specialty
Knights Landing, Calif.

LITTLE'S
ITALIAN QUEENS
1 to 24 ..... $1.45
25 to 99 ..... 1.35
100 and Up 1.25
Until June 15
ROYAL JELLY
Bulk & Capsules Write for Prices
LITTLE'S APIARIES
Shelbyville, Tennessee

HOLLOPETER'S ITALIAN QUEENS
In Season
WHITE PINE BEE FARMS Rockton, Penna.

1958 Prices
Italian Bees and Queens

	1-24	25-99	100-up
2-lb. pkg. with queen	$4.50	$4.25	$4.00
3-lb. pkg. with queen	5.70	5.45	5.20
Italian Queens	1.45	1.35	1.25

We are feeding Fumidil for Nosema control.
J. F. McVay Jackson, Alabama

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

Choice Italian Bees & Queens

1958 Prices

Pkgs. & Qns.	1-24	24-49	50 & Over
2 lb.	$4.15	$3.95	$3.75
3 lb.	5.05	4.85	4.75
3 lb & 2 qns.	6.05	5.85	5.75
Qns.	1.50	1.40	1.25

Pkgs. are priced F.O.B. Live Oak
Queens Prepaid Airmail
Shipping starts April 1

No deposit required for booking Payment to be made before shipping date or when bees are delivered to customers truck.

Eugene Walker
Rt. 2, Box 982
Live Oak, Calif.

QUEENS only QUEENS

A. Vallotton
1442 So. Juniper
Escondido, Calif.

The best obtainable because we use the most modern methods and equipment. Breeding queens really selected from all over the States. We have the ideal location for climatic conditions required for highest quality queens.

1-100 ..... $1.25
100 up 1.10

Airmail — All Guarantees

SEEDS

HONEY PLANTS our specialty. Catalog on request. PELLETT GARDENS, ATLANTIC, IOWA.

MISCELLANEOUS

BEES REMOVED from house or tree or hive without touching either house or bees. Bees will then move honey into hive. Save property, honey, and bees with my method. Send $2.00 for details. Satisfaction guaranteed. GEORGE HAWKINS, RT. 1, LAWSON, MO.

WANTED to buy, used 20 or 30 frame Radial extractor. FOR SALE—4-8 Universal extractor, motive drive. G. P. CHAPPELL, ROUTE 2, CULLEOKA, TENN.

ROYAL JELLY, $10.00 per oz., bulk price, $8.00 per oz. O. K. ANDERSON & SON APIARIES, Box 193, COFFEE SPRINGS, ALABAMA, U.S.A.

WANTED: To buy bee outfits and bee equipment in any area. We have buyers for outfits, regardless of size. SIOUX HONEY ASSOCIATION, Supply Dept., SIOUX CITY, IOWA.

$2500 will buy a half interest in 9 acres of Fruit & Bee Culture Bird Refuge. Inquire P.O. BOX 207, ARNDTS PLACE, PLYMOUTH, WIS.

HOW MUCH is a swarm worth? At least $15.00. How much honey do the drones in one colony eat in one summer? At least 10 pounds and possibly 20. Can you afford to let swarms escape? Of course not, nor can you afford to feed drones. OBSERVATION Drone and Queen Traps save swarms and eliminate drones. $3.95 post paid. Mighty cheap insurance. PATENT SERVICE ASSOCIATES, HAVERHILL, N. H.

ROYAL JELLY (with Vitamin B-1 and Calcium Pantothenate) box of 30 capsules with 25 mg. Royal Jelly per capsule $2.15 to beekeepers, retails for $4.25, box of 30 capsules with 50 mg. Royal Jelly per capsule $3.50 to beekeepers, retails for $7.00, box of 100 in bulk 50 mg. new pack without vitamins $7.50. Postage paid in the U. S. PRAIRIE VIEW HONEY CO., 12303 12th STREET, DETROIT 6, MICH.

NOTICE TO ALL OUR ROYAL JELLY DEALERS: We now have a specially constructed self-folding display card also an attractive display carton that holds one dozen boxes of Royal Jelly capsules. They are FREE. Let us know how many you need. PRAIRIE VIEW HONEY CO., 12303 12th STREET, DETROIT 6, MICH.

BEAUTY CREAM with Royal Jelly, ¾-oz. jar, $15.00 dozen to beekeepers, retails for $2.50, 1-oz. jar, $18.00 dozen to beekeepers, retails for $3.00, 2-oz. jar, $24.00 dozen, retails for $5.00. PRAIRIE VIEW HONEY CO., 12303 12th STREET, DETROIT 6, MICH.

ROYAL JELLY, box of 30 capsules 25 mg. each $5.00, 10 boxes, $25.00, 50 mg., box of 30 capsules $8.50, 10 boxes, $42.50, special pack of 15 in vial, $1.95, 10 vials, $13.50. SUNNYBROOK HONEY FARMS, 13600 LIVERNOIS, DETROIT 38, MICHIGAN.

ROYAL JELLY—We buy any amount. We sell in any amount, also royal jelly capsules at jobber, wholesale or retail levels. R. C. DANIELS & COMPANY, PICAYUNE, MISS.

MAGAZINES

Archiv fur Bienkunde, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal

YORK'S 1958 Quality Bred
Italians Starlines and Midnites

Fumadil Fed

The Strains Preferred by Leading Honey Producers

Packages with Italian Queens

Quantity	1-24	25-99	100 up
2 lb.	$4.50	$4.25	$4.00
3 lb.	5.70	5.45	5.20
4 lb.	6.90	6.65	6.40
5 lb.	8.10	7.85	7.60
Extra Queens Italian	1.45	1.35	1.25

Queenless packages —deduct $1.00 per package

Tested Queens — add $1.00 per package or queen.

Packages with Starline or Midnite Queens

Quantity	1-24	25-99	100 up
2 lb.	$4.80	$4.55	$4.30
3 lb.	6.00	5.75	5.50
4 lb.	7.20	6.95	6.70
5 lb.	8.40	8.15	7.90
Extra Queens Starline or Midnite	1.75	1.65	1.55

Terms: Small orders cash, large orders $1.00 deposit per package and balance two weeks prior to shipping date.

YORK BEE COMPANY Jesup, Georgia
(The Universal Apiaries)
412 W. Orange Street **P.O. Box 300**
Phone: Garden 7-4131

DADANT'S STARLINE HYBRID
Reg. U. S. Pat. Off.

in the world. Praised again and again for its decades of independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. BIENE-VERGLAG, GIELBACK, LINDAU, GERMANY.

Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free or Rs 1/8, or s2/6, or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

BEE WORLD, the international journal of the Bee Research Association published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $5.50 per annum, or $6.00 including membership of the Bee Research Association. Apicultural Abstracts only $4.50 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 BARNETT WOOD LANE, ASHTEAD, SURREY, ENGLAND.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. BOX 3106, CAPE TOWN SOUTH AFRICA.

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information on range sheep than any other magazine published. Subscription $3.00. BOX 189, SAN ANGELO, TEXAS.

MONEY IN DAIRY GOATS. Produce healthful milk. Monthly magazine—6 month trial $1.00. DAIRY GOAT JOURNAL, COLUMBIA T2, MO.

When you think of BEES and QUEENS

Think of —

Merrill Bee Co.

P.O. Box 115
State Line, Miss.

Our 100% SATISFACTION has been good for 46 years. Let us prove it.

Pkgs. with Queens

2-lb. pkg. . . . . $3.50 any number
3-lb. pkg. . . . . 4.50 any number
Untested qns. 1.00 any number
Tested qns. . . 1.50 any number

Terms $1.00 per package with orders, balance before shipments.

A PUFF'S ENOUGH — FOR BUSY BEEKEEPERS!

The Push-Button Bee Smoker

Join the swarms of happy users — thousands of them who save precious time and money with their HIVE-BOMBS. No heat: No sparks: No fire hazard — not from HIVE-BOMBS. You get fingertip convenience when you hold a HIVE-BOMB; no fussing with fuel or matches. And a HIVE-BOMB'S life is amazingly long — the perfect standby tool.

$1.29 plus freight at your dealers.

(R) Stewart Taylor, Camargo, Illinois

CAUCASIAN OR ITALIAN PACKAGE BEES AND QUEENS

Proven for honey production, easy handling, health certificate, live arrival guaranteed and top quality.

PRICES

Lots of	Queens	2 lb. & Q	3 lb. & Q	4 lb. & Q	5 lb. & Q
1 - 24	$1.50	$4.25	$5.35	$6.45	$7.55
25 - 99	1.40	4.00	5.05	6.10	7.15
100 - 499	1.30	3.75	4.75	5.75	6.75

FARRIS HOMAN SHANNON, MISS.

BETTER BRED QUEENS
THREE BANDED ITALIANS

Blue ribbons; Grand Champions; Prize winner. Not official but in reality our Better Bred Queens will qualify. They have proven it through the yeyars. They are among the best

	Queens	2 lb. w/q	3 lb. w/q
1 to 24	$1.40	$4.25	$5.35
25 to 100	1.15	3.75	4.75

CALVERT APIARIES Calvert, Alabama

YOUR GIFT TO EASTER SEALS

assures continued skilled service to all the crippled

------ROYAL QUEENS------

An improved strain for Royal Jelly Production.

1 to 100 .... $1.25 each
100 & up ... 1.00 each

Producers & Dealers of Royal Jelly Products
Buy direct.

O. K. Anderson & Son Apiaries
P.O. Box 193, Coffee Springs, Ala.

QUALITY ITALIANS
PACKAGES & QUEENS FOR '58
Write us for Prices
WILKES APIARIES
Phone 2582 Box 206 Hamburg, Louisiana

THE AUSTRALASIAN BEEKEEPER

The senior beekeeping journal of the Southern Hemisphere provides a complete cover of all beekeeping topics in one of the world's largest honey producing countries. Published monthly by Pender Bros. Pty. Ltd. Box 20, P. O., Maitland, 3N, N.S.W., Australia. Subscription by Bank Draft or International M. O. 18/-(Approx. $2.15) per year, post free. Sample copy free on request.

JENSEN'S

Package Bees and Queens

Packages with Dadant "Starline" Hybrid Queens	1-24	25-99	100-up
2 Lb.	$4.80	$4.55	$4.30
3 Lb.	5.90	5.65	5.40
4 Lb.	7.00	6.75	6.50

Packages with Jensen's "Magnolia State" Italian Queens	1-24	25-99	100-up
2 Lb.	$4.50	$4.25	$4.00
3 Lb.	5.60	5.35	5.10
4 Lb.	6.70	6.45	6.20

Starline —QUEENS— Magnolia

$1.75 $1.65 $1.55 $1.45 $1.35 $1.25

Clipped and Marked Free Air Mail Postage Paid

JENSEN'S APIARIES MACON, MISS. U.S.A.

Reg. U. S. Pat. Off.

QUALITY ! — ITALIAN — QUALITY !
QUEENS
1-24, $1.25 25-49, $1.20 50 up, $1.10
Postpaid — Airmail.
Health certificate with each order.
Ready to ship April 1, 1958.
UNITED APIARIES
Rt.1 Arthur City, Texas
33 Years as Queen Breeders
Guaranteed to please.

Italian Bees and Queens
2 lb. with queen $3.50
3 lb. with queen 4.50
4 lb. with queen 5.50
Extra queens 1.20
Health certificate and live arrival guaranteed.
Raymond McFarling
Rt. 3 Tupelo, Miss.

QUALITY ITALIAN
Package Bees & Queens
3-lb. pkg. bees, ... $4.75
Queens (each) 1.00
Barricklow Bros., Doerun, Ga.

INTERESTED IN ROYAL JELLY PRODUCTION?
A 10-day short course of practical training now offered by one of the nation's leading authorities on queen rearing and Royal Jelly production. 35 years experience.
For full details write —
L. H. LITTLE
Little's Apiaries
Shelbyville, Tennessee

ITALIAN QUEENS	1-24	25-49	50 or over
May queens	$1.25	$1.10	$1.00
2-lb. pkgs.	4.15	3.75	3.75
3-lb. pkgs.	5.10	4.75	4.75

JOHN S. SHACKELFORD **RIO OSO, CALIF.**
Phone Wheatland, Calif. NEptune 3-2392

A PLACE FOR YOUNG PEOPLE IN BEEKEEPING

(Continued from page 219)

learning all this he can come up with some better ideas of his own he is a valuable man and the beekeeping industry needs him.

Suggested Line of Study for Student Beekeepers:

Read every available book on beekeeping.

Take short course at a nearby college when and if available.

Work one season with a commercial beekeeper (two seasons if possible).

Keep one to six colonies of bees to study and experiment with.

Get into the selling end at least long enough to know what it is all about.

Our Cover

THIS BEAUTIFUL stewardess holds a package of 50 queen bees that are being rushed from the South to the North. These queens shipped during April could head colonies that would store over 5000 pounds of surplus honey this season. Approximately one million queens are produced and shipped each year in the U. S. Photo by George Valentine Enell & Assoc., Inc., La Guardia Field, New York, N. Y., through the courtesy of TWA—Trans World Airline.

Prepare for the Future . . . .
Buy United States Savings Bonds Regularly!

ITALIAN.....“GULF BREEZE”.....QUEENS
Gulf Breeze queens are bred to a high standard of quality. Use them for requeening and for divisions.
Prices:
1-9....$1.40 10-49....$1.30 50 up....$1.20 ea.
BESSONET BEE COMPANY **Donaldsonville, La.**

QUEENS

Italians		Caucasians	
PKGS. W/Q.	1-24	25-99	100 up
2-lb.	$4.30	$4.25	$4.00
3-lb.	5.40	5.30	5.10
Nice large qns.	1.25	1.15	1.05

We are able to fill your orders for queens promptly. Send us your order for 1 or 1000.

Producer of Royal Jelly in large quantities.

Galvanized metal feeders, $1.60

Mitchell's Apiaries
Bunkie, La.

QUALITY BRED ITALIANS
Jan., Feb., and March, $1.45 ea.
April and May ..... 1.00 ea.
June through Oct., ... .75 ea.
Package Bees ready in April
Two pound .....(f.o.b.) $4.15
Three pound .....(f.o.b.) 4.90
We prefer to send package bees by Parcel Post so please inclose postage with order. All queens selected from our Northern Apiaries for Hardiness and Honey production All queens shipped Air Mail.
Walter D. Leverette Apiaries
Box 364, FORT PIERCE, FLORIDA

BRITISH BEE JOURNAL
The Only FORTNIGHTLY Bee Journal in the World
Subscription price £1.1.0 per annum, post free, six months 11/6d. post free and three months 6/3d. post free.
Keep up to Date in Beekeeping by taking out a subscription now through our agents:
Gleanings in Bee Culture
Medina, Ohio

DON'T TAKE SOIL FOR GRANTED

(Continued from page 211)

table and animal matter in his soil. The gray color is an indication that organic matter has been leached from the mineral or earthy materials.

From these facts we can readily see why northwestern and westcentral Ohio produce the greater portion of honey gathered in the state. But let me give a word of caution—these conclusions are of a general nature. Many other things enter the picture to influence a local crop. The effect of suburbanization, chemical sprays, and the recent major changes in farm practices are great. In my reference to soil I neglected to mention soil air and soil moisture, two important components. Drainage is very influential. Alluvial soils or “bottom land” may make an exception to the general rule.

Up until now we have mentioned only Ohio soil. The same elements influence the productivity of soil the world around. The mineral content will vary. The climate will differ. Of course, various native blooms will supply the nectar. But the principle is very much the same. Nectar is produced when the correct combination of soil, plant, and climatic conditions exists.

A crop of clover honey in Ohio does not just happen. It is the result of a complicated series of preconceived events. The chain starts with the farmer working jointly with the proper soil. Mother nature's elements must cooperate. The beekeeper and his industrious workers are superimposed upon the scene. The honey flow is the end product of good soil and correct farm management.

CANADA'S
National Monthly Magazine for Beekeepers
Canadian Bee Journal
Streetsville, Ontario, Canada

PACKAGE BEES **QUEENS**

"ITALIANS"

Wilbanks offers you tested stock proven for honey producing ability and easy handling. Satisfied customers through the years assure you of the greatest value here.

	1-9	10-49	50-up
2-lb. pkg. with young laying queen	$4.24	$4.00	$3.75
3-lb. pkg. with young laying queen	5.35	5.10	4.85
4-lb. pkg. with young laying queen	6.45	6.10	5.85
Extra Queens	1.40	1.30	1.20

Shipments by Express, Parcel Post, or your Truck
Quality Does Not Cost — It Pays

THE WILBANKS APIARIES **Claxton, Georgia**

QUEENS **PACKAGES**

Rearing Italian queens and bees of reliable quality is our only business.

	1-24	25-99	100-up
2-lb. pkg. with queen	$4.50	$4.25	$4.00
3-lb. pkg. with queen	5.70	5.45	5.20
Queens	1.45	1.35	1.25

Deduct $1.00 on queenless packages Tested queens, $2.50

W. E. PLANT **Hattiesburg, Miss.**

PACKAGE BEES ITALIAN QUEENS

Good Producers — Gentle
You will like them. Good service.

A. R. BANTA **Los Molinos, Calif.**

California Caucasians

Gentle and industrious Caucasian queens. NEW - Midnite Hybrid Caucasian queens. Ready to ship about April 10th. 10% books your order - Balance due two weeks prior to shipment. Air Mail.

Number of Queens	Regular	Midnite
1 to 24	$1.40	$1.70
25 to 99	1.30	1.60
100 and over	1.20	1.50

Quality and Service Doesn't Cost — IT PAYS

DON J. STRACHAN **Yuba City, Calif.**

R. 2, Box 83 **Phone Sherwood 23881**

No Matter What Your Interest

Whether you are a Commercial Beekeeper; a Sideline Beekeeper; or a Beginning Beekeeper,—you'll find what you want in ABJ. PLUS Science and Industry; Honey Plants; Meetings; Crops and Markets—AND your questions answered FREE.

Send for a sample copy.

American Bee Journal
HAMILTON, ILLINOIS

"The Australian Bee Journal"

Published by the Victorian Apiarists' Association at the beginning of each month. Subscription 10/-per annum plus 2/6 postage to overseas countries.

Box 167, Rainbow,
Victoria, Australia

STOVER'S

ITALIANS CAUCASIANS

Sorry all booked up for April but can accept some orders for May delivery
May we have the privilege of serving you?

— PRICES —

Lots of	Queens	2-lb. & Q.	3-lb. & Q.	4-lb. & Q.	5-lb. & Q.
1 - 24	$1.50	$4.25	$5.35	$6.45	$7.55
25 - 99	1.40	4.00	5.05	6.10	7.15
100-499	1.30	3.75	4.75	5.75	6.75

Tested Queens — $2.50 each

Queens Postpaid — Airmailed and/or Clipped — No Extra Cost
10c each extra for marking — Packages F.O.B. Shipping Point

THE STOVER APIARIES

Mayhew, Miss.

QUEENS — Two Extra Good Strains. 2-lb. with queen $4.50

PACKAGE BEES — — — —

QUEENS — Real Good Workers and Very Gentle. 3-lb. with queen $5.70

Over 25 packages, deduct 25c per package.

Untested queens, 1 to 25 ..... $1.45 25 to 100 ..... $1.35 100 up $1.25

Dadant's Starline Hybrids Best of Honey Producers and Very Gentle

Add 30c to each queen or package.

ALAMANCE BEE COMPANY, Geo. E. Curtis & Sons, La Belle, Fla.

BUILD your own FACTORY TYPE HIVES and SUPERS with SAMPSON CORNER JOINTS. Only a bench saw and hand tools required. Our low cost Copyrighted BLUE PRINTS and INSTRUCTIONS cover everything and can save you many dollars. Write for information.

EARL TAYLOR MALCOM, IOWA

TOO LATE TO CLASSIFY

FOR SALE—70 two-story, ten-frame colonies, extra supers, extracting and miscellaneous equipment. GEORGE EICH, 333 PINE ST., JOLIET, ILL.

FOR SALE—Foundation mould. Metz Bakery, North Brunswick, N. J., Shopping Center U. S. No. 1 & Milltown Road.

PACKAGE BEES, QUEENS, Attractive prices, write. CRENSHAW COUNTY APIARIES, RUTLEDGE, ALA.

THE SCOTTISH BEEKEEPER (The official organ of the Scottish Beekeepers' Association.) Scottish in character, international in appeal. Annual subscription $2 post free. Sample copy from ROBERT N. H. SKILLING, F.S.C.T., 87 KING STREET, KILMARNOCK, AYRSHIRE.

HARPER'S

Famous High Quality Italian Queens & Package Bees

2-lb. package w/queen — $4.00
3-lb. package w/queen — 5.00
Queens by air mail — — 1.25

Have a few more open dates for April.

CARLUS T. HARPER
New Brockton, Ala.

Secure Your Future
Buy Bonds
They come in all sizes
—and grow bigger every year.

BETTER QUEENS

(Continued from page 216)

or four days. If they are left longer too much brood will be produced, the feeding of which may cause starvation and later cause the population to outgrow its quarters. Where only one or two queens are to be mated in a "nuc" this is of no great importance, but where nuclei are to be used throughout the season carefully maintaining a balance of bees, brood and stores is necessary. Extra brood and bees from "nucs" with too much strength can often be used to "patch up the misses". Where no queens are needed at the time they should be removed from the nuclei, they may be removed and stored. This operation will be discussed next month in the final article of the series.

(to be continued)

Caucasian Queens for 1958

1 to 24 ..... $1.40
25 to 99 ..... 1.30
100 & up 1.20

For Midnite Caucasian Hybrid Queens add 30 cents per queen to above prices.

NOTICE: We are sold out of package bees.

HOWARD WEAVER & SONS
Navasota, Texas

ITALIANS
Queens, $1.25 Bees, $1.00 Cages, 50c
Royal Jelly by contract
Sioux Member 905
NASSAU BEE CO. HILLIARD, FLA.

LIVE AND LEARN

(Continued from page 223)

though one of the chain stores here ran a special recently of a five pound jar of nice looking honey for $1.39. That sounds like four cent honey to me for the beekeeper who kept the bees that gathered it. Either that or somebody else lost his shirt on the way up. The only comments that I have heard is, that isn't the real thing, and nobody is buying it because they think it is adulterated. That should be the penalty for anybody foolish enough to give away what they worked so hard to put up.

NORMAN BROS.
Bright 3-Banded Italian
BEES & QUEENS

For fine quality bees and dependable service. KEEP US IN MIND. We rank with the best in quality and service. Full weight, safe arrival, health certificate and satisfaction. In U.S.A. and Canada.
37 Years as Shippers

— PRICES —	1 to 11	12 to 100
2-lb. pkg. with queen	$4.25	$4.00
3-lb. pkg. with queen	5.25	5.00
Untested queens	1.10	1.00
Tested queens	2.10	2.00

Package bees F.O.B. Express. Shipped parcel post by request. Add postage.
NORMAN BROS. APIARIES RAMER, ALA.

FLOWERS Quality ITALIANS

OUR BEES STAND TEST FOR HONEY GATHERERS: GENTLE: PROLIFIC: Bred from hives making 300 pounds or over honey. FUMIDIL-FED grafting and queen yards. HEALTH CERTIFICATES with each shipment. We are prepared to fill all orders promptly. COME AFTER YOUR BEES or shipped express or P.P. PROMPT LIVE DELIVERY GUARANTEED. $1.00 deposit per package. Balance two weeks prior to shipping date. ORDER NOW FOR CHOICE SHIPPING DATES: PRODUCERS OF ROYAL JELLY ALSO. WRITE US ON LARGE ORDERS. WE CAN HELP YOU.

All packages with select young laying queens F. O. B. Jesup.

2-lb. pkg. w/q $3.75
3-lb. pkg. w/q 4.75
4-lb. pkg. w/q 5.75
5-lb. pkg. w/q 6.75
For Queenless Pkgs. deduct price of Queen
Tested Queens 2.00
Select Queens 1.00
1 or 1000 airmail

FLOWERS BEE COMPANY
Jesup, Georgia, U.S.A.
PHONE: JUNO 4-2830 or 4-2837

ITALIAN QUEENS

Top quality superior strain by 46 years experienced queen breeding.
— Your Satisfaction Always Here —
$1.00 ea. 12 or more, 90c ea.

MERRILL APIARIES
302 Beatrice St. Greenville, S. C.

The New Zealand Beekeeper
The Quarterly Magazine of the National Beekeepers' Association of New Zealand. Better Beekeeping—Better Marketing. Subscription, 8 shillings per year, payable to

THE GENERAL SECRETARY
Box 19 Foxton, New Zealand

THREE BAND and PURE ITALIAN HYBRID
Package Bees and Queens

We ship pure worker bees by mail, express, or truck—with queens introduced or not whichever you like. We guarantee live arrival.

1 9 5 8 PRICES
Each with a Young Laying Queen

Lots of	2 lbs.	3 lbs.	4 lbs.	5 lbs.
1 to 11, Each	$4.25	$5.35	$6.45	$7.55
12 to 29, Each	4.05	5.10	6.15	7.20
30 or More, Each	3.85	4.85	5.85	6.80

JACKSON APIARIES P.O. Box 58 Funston, Ga.

Plan Early to Buy Quality Package Bees & Queens
Dadant Starline Hybrid Queens & Garon's 3-Banded Italians

QUEENS	Starlines	Italians	PACKAGES WITH QUEENS	2-lbs.	3-lbs.	4-lbs.
1-24	$1.70	$1.30		$4.05	$5.05	$6.05
25-99	1.60	1.25		3.95	4.95	5.95
100-up	1.50	1.20		3.85	4.85	5.85

For Dadant Starline Queens, add 30c extra per package
Queens clipped, marked and air mailed at no extra charges.

Reg. U. S. Pat. Off.

GARON BEE CO. Donaldsonville, La.

NORMAN'S
BEES & QUEENS
"Home of Quality"
— Now Ready —

Try John A. Norman's Bright 3-Band Italian Bees and Queens. All orders appreciated and given prompt attention. Safe arrival, young laying queens, full weight packages, and satisfaction guaranteed. State health certificate furnished.

Untested Queen	$1.00
Tested queen	2.00
2-lb. pkg. with queen	4.00
3-lb. pkg. with queen	5.00

Packages shipped F.O.B. Express or via parcel post, postage collect.

JOHN A. NORMAN
Grady, Alabama Route 1

Synott & Cameron

QUALITY
Italian Bees and Queens
Full Weight Packages
Good Young Italian Queens
Prompt Service

ORDER NOW

Bees w/q	1-25	25-up
2-lb. pkg.	$4.00	$3.75
3-lb. pkg.	5.00	4.75
4-lb. pkg.	6.00	5.75
5-lb. pkg.	7.00	6.75
Queens	1.25	1.15

Queens postpaid
Queenless packages deduct price of queen
Safe arrival guaranteed

Telephone: Estill S. C. 3653

Synott & Cameron
Lena, S. C.

QUALITY ONLY
ITALIAN QUEENS
for High Production
Prompt Service
FRANK G. STEWART
Phone: Millville 548
Box 87, Palo Cedro, Calif.

For the Big Things in Life, be ready with United States Savings Bonds

PRODUCING AND SHIPPING BEES AND QUEENS

(Continued from page 203)

packages are produced, and that is a fair question. In some instances the shipper did not have the opportunity to shake colonies before shipping packages and since such colonies contain a large number of old bees, such packages are considered inferior. In addition, if drones are not excluded, a large number find their way into the packages and since drones add to the weight of the packages, the buyer has fewer worker bees.

The handling of the packages after filling the cages until shipping time is important in that careless exposure to cold or sun will cause serious damage to the bees. This damage may not be apparent at the time, but damaged bees have a short life span and die faster.

Sugar Spraying Injurious to Bees

Many years ago, I experimented with spraying bees with sugar syrup before installing in nucs and the result of the experiment proved without doubt that such a practice is injurious to bees. Both buyers and shippers frequently spray bees without realizing the damage they are doing. The syrup dries on the wings leaving a hard brittle wing that soon breaks up and the bees die prematurely. If you ever had sugar syrup spilled on your trousers, you know what I mean and will realize that the syrup could not help the bees' wings.

Spraying bees with sugar syrup before placing in the nucs caused all the bees to die in many instances before young bees emerged from the first cycle of brood in the nucs. Many buyers spray the packages and when I see pictures of this method, I wonder if the shipper will be blamed for shipping old bees when the buyer was killing the bees without realizing what he was doing.

It is these apparently unimportant things that point to the need for more information on the causes of failure when they occur. The need for more information on improved practices is great and with new trends demanding fewer man hours in our operations, we are certainly far from reaching the peak of perfection.

Just Thirty Days---

Thirty days from the time you read this; Package Bees will be moving at a rapid rate. Will your order be included? Many dates have been filled now, Feb. 10th. Do Not delay.

We spare no expense to give you the Best. Stock has been selected for production. By popular demand antibiotics are being used for healthier Bees and Queens.

w/reg. qn.	2 lb. pkgs.	3 lb. pkgs.
1-25	$4.75 ea.	$5.75 ea.
26-99	4.50 ea.	5.50 ea.
100-up	4.25 ea.	5.25 ea.

For Island Hybrid Queens add 30c each.

"They Produce"

ROSSMAN APIARIES

P.O. Box 133 Moultrie, Ga.

"Renee" Brand QUEENS

1 to 25 ..... $1.20
26 up 1.10

Live Delivery Guaranteed
Satisfaction or money back
Airmailed, clipped on request

TRADITION BEE & HONEY CO.

P. O. Drawer 307, Silver Springs, Florida
We Do Our Best to Satisfy

U. S. Savings Bonds come in all sizes .....and grow bigger every year.

Carniolan and Caucasian

1958 QUEEN PRICES

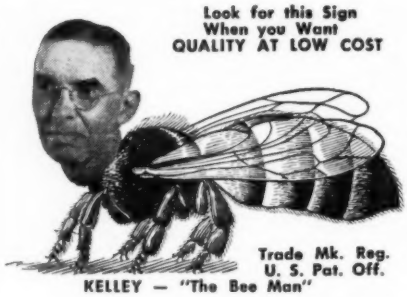
1 to 40	$1.40 each air mail
49 to 99	1.30 each air mail
100 up	1.20 each air mail

$2.00 each to foreign countries. Safe arrival in continental U. S. only. Ready March 1st.

No package bees this season.

W. D. REAMS

Box 87 La Belle, Florida



KELLEY — "The Bee Man"

KELLEY'S BEES

Improved three-banded Italian bees and queens direct from our own farm. Shipments start April 1st, express or parcel post shipment. Thousands of extra queens.

	Queens	2-lb. w/q	3-lb. w/q
1-24	$1.25	$4.25	$5.25
25-99	1.20	4.00	5.00
100-up	1.15	3.75	4.75

THE WALTER T. KELLEY CO.

Clarkson, Ky.

Index to Display Advertisers

Aeppler Co., C. W. 245
Alamance Bee Company 252
American Bee Journal 251
Anderson & Son, O. K. 248
Australasian Beekeeper 248
Australian Bee Journal 251
Banta, A. R. 251
Barricklow Bros. 249
Benson, K. P. 194
Bessonet Bee Co. 250
Blue Bonnet Apiaries 245
British Bee Journal 250
Burleson & Son, T. W. 199
Calvert Apiaries 248
Canadian Bee Journal 250
Carbolineum Wood Preserving Co. 199
Cary Corp., M. R. 195
Chrysler & Son, W. A. 199
Cloverline Apiaries 196
Conneaut Can Co. 195
Continental Can Co. 200
Flowers Bee Company 253
Garon Bee Co. 254
Harper, Carlus T. 252
Hazel-Atlas Glass 200
Homan, Farris 248
Hutchison Mfg. Co. 199
Jackson Apiaries 199, 254
Jensen's Apiaries 249
Jepson Co., H. H. 194
Jones & Son, F. W. 194
Walter T. Kelley Co. 198, 256
Leverette Apiaries, Walter D. 250
Little's Apiaries 245, 249
Lotz Co., August 195
Marshfield Mfg. Co. 194
McVay, J. P. 245
McFarling, Raymond 249
Merrill Apiaries 253
Merrill Bee Co. 247
Mitchell's Apiaries 250
Nassau Bee Co. 253
New Zealand Beekeeper 253
Norman Bros. Apiaries 253
Norman, John A. 254
Overbey Apiaries 199
Plant, W. E. 251
Prairie View Honey Co. 195
Reams, W. D. 255
Rossman Apiaries 255
Schmidt Apiaries 195
Shackelford, John S. 249
Sioux Honey Association 198
Stewart, Frank A. 254
Stoller Honey Farms 199
Stover Apiaries 252
Strachan, Don J. 251
Synott & Cameron 254
Taylor, Earl 252
Taylor, Stewart 248
Tradition Bee & Honey Co. 255
United Apiaries 249
Vallotton, A. 246
Walker, Eugene 246
Weaver & Sons, Howard 253
White Pine Bee Farms 245
Wilbanks Apiaries 251
Wilkes Apiaries 248
Williams Bros. Mfg. Co. 194
Wing & Sons, J. E. 245
Woodman Co., A. G. 194
York Bee Company 247